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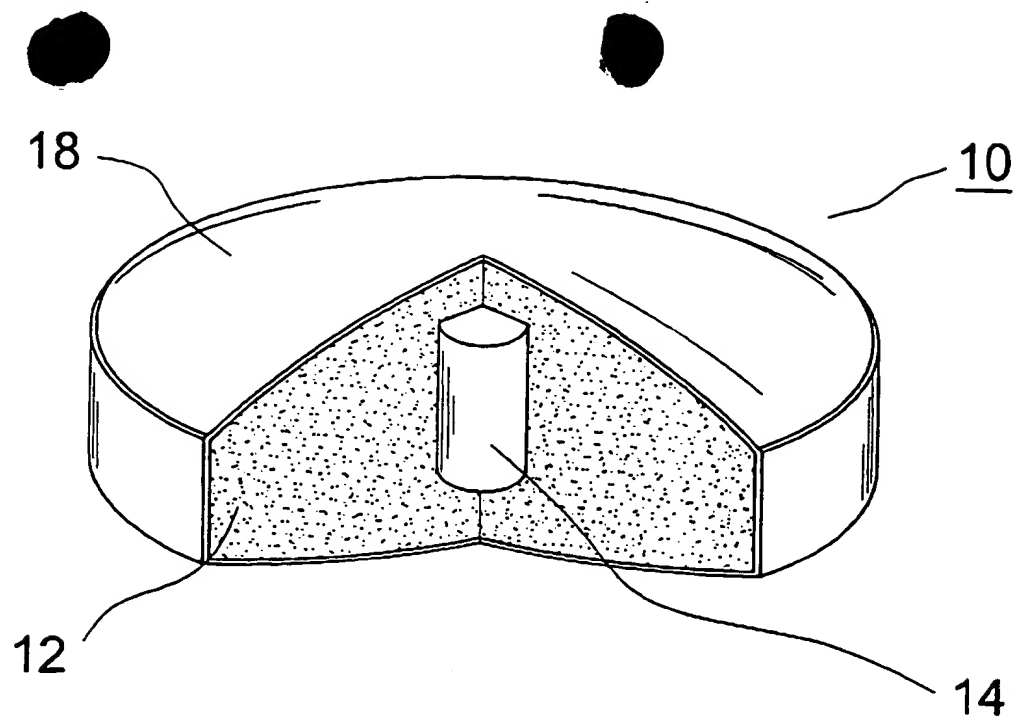


FIG. 1A

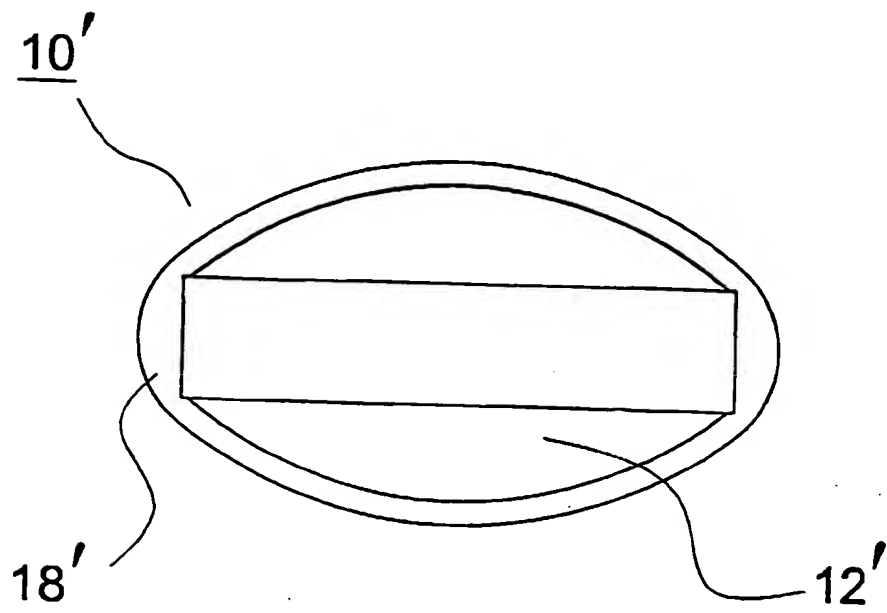


FIG. 1B

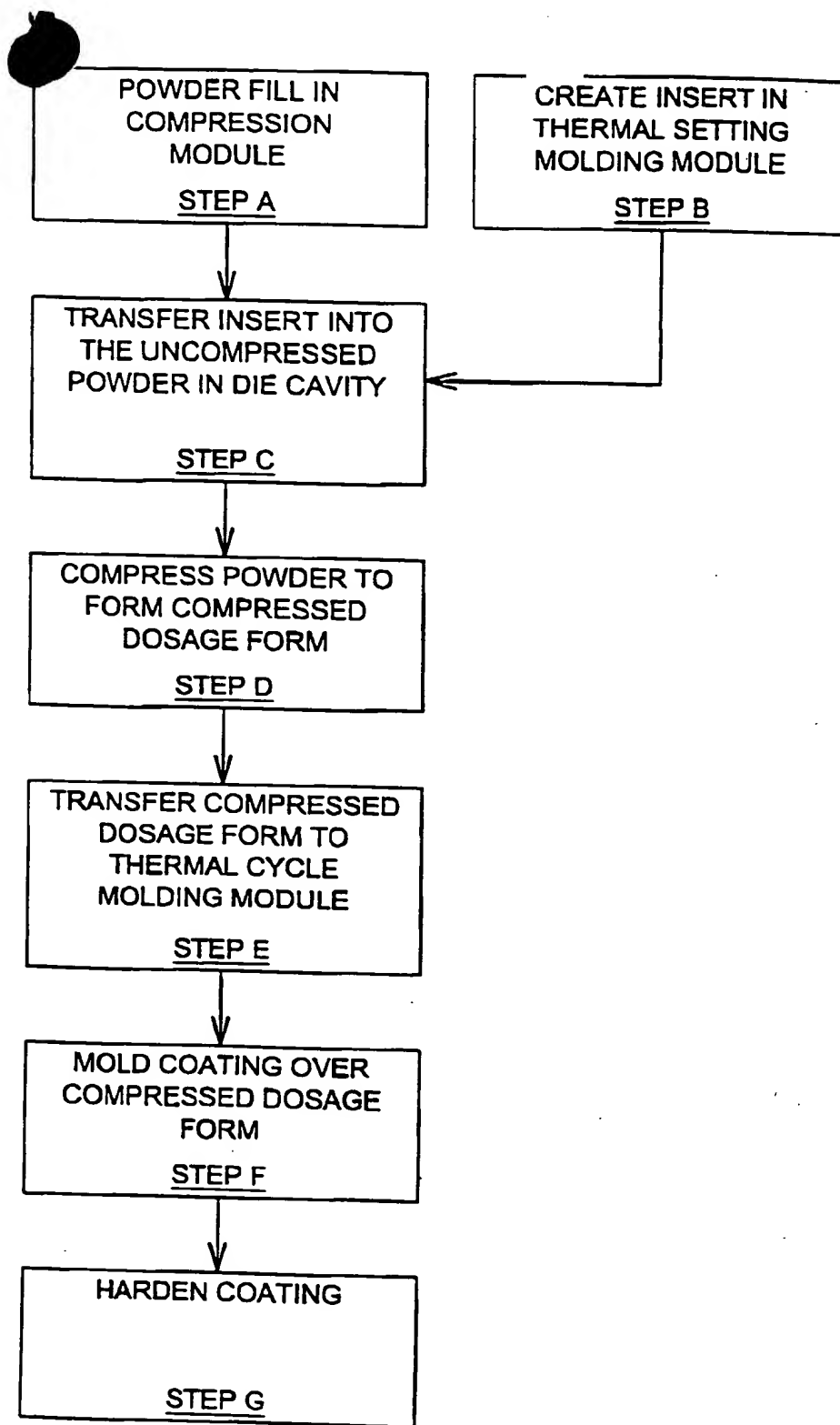


FIG. 2

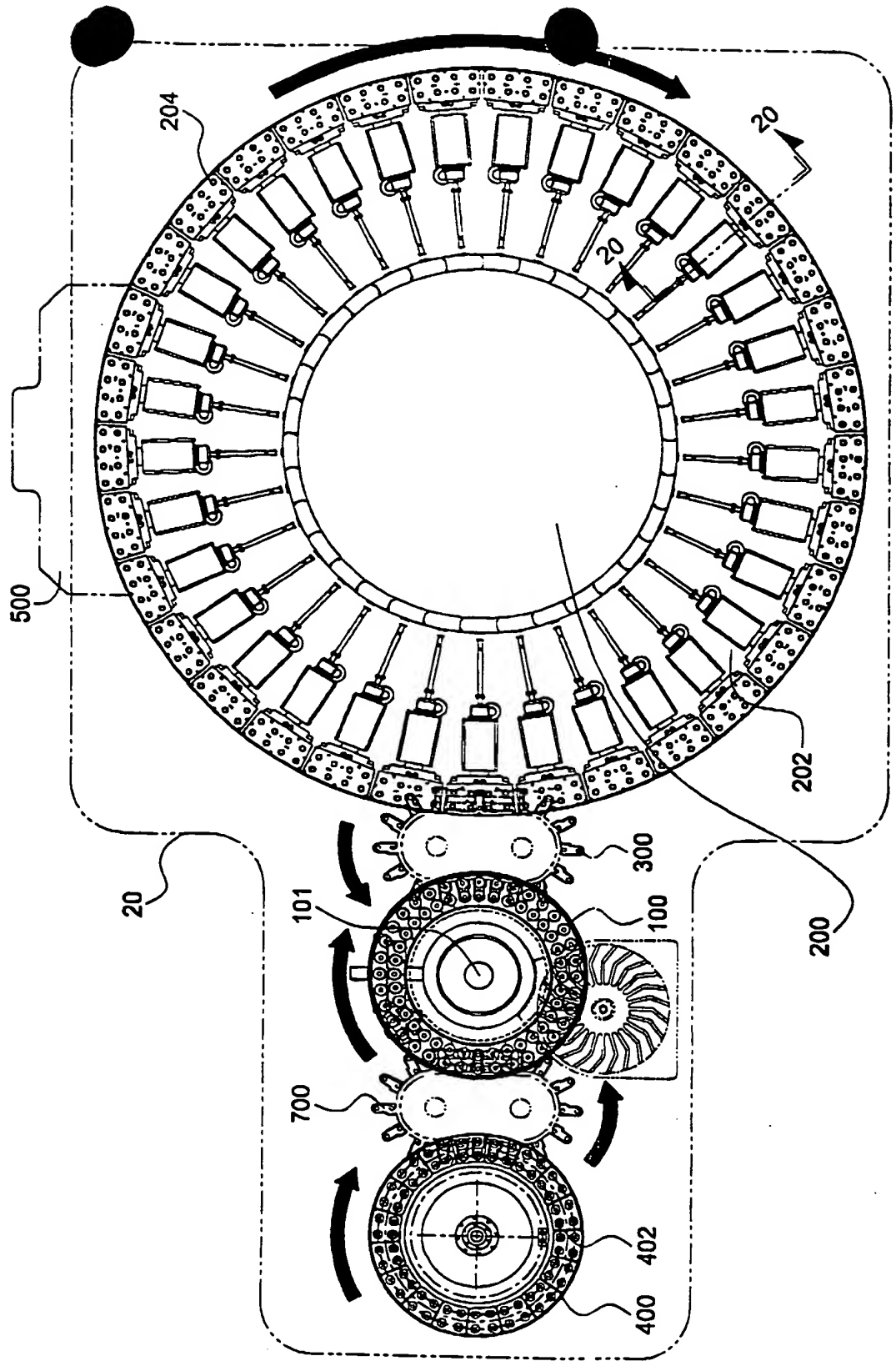


FIG. 3

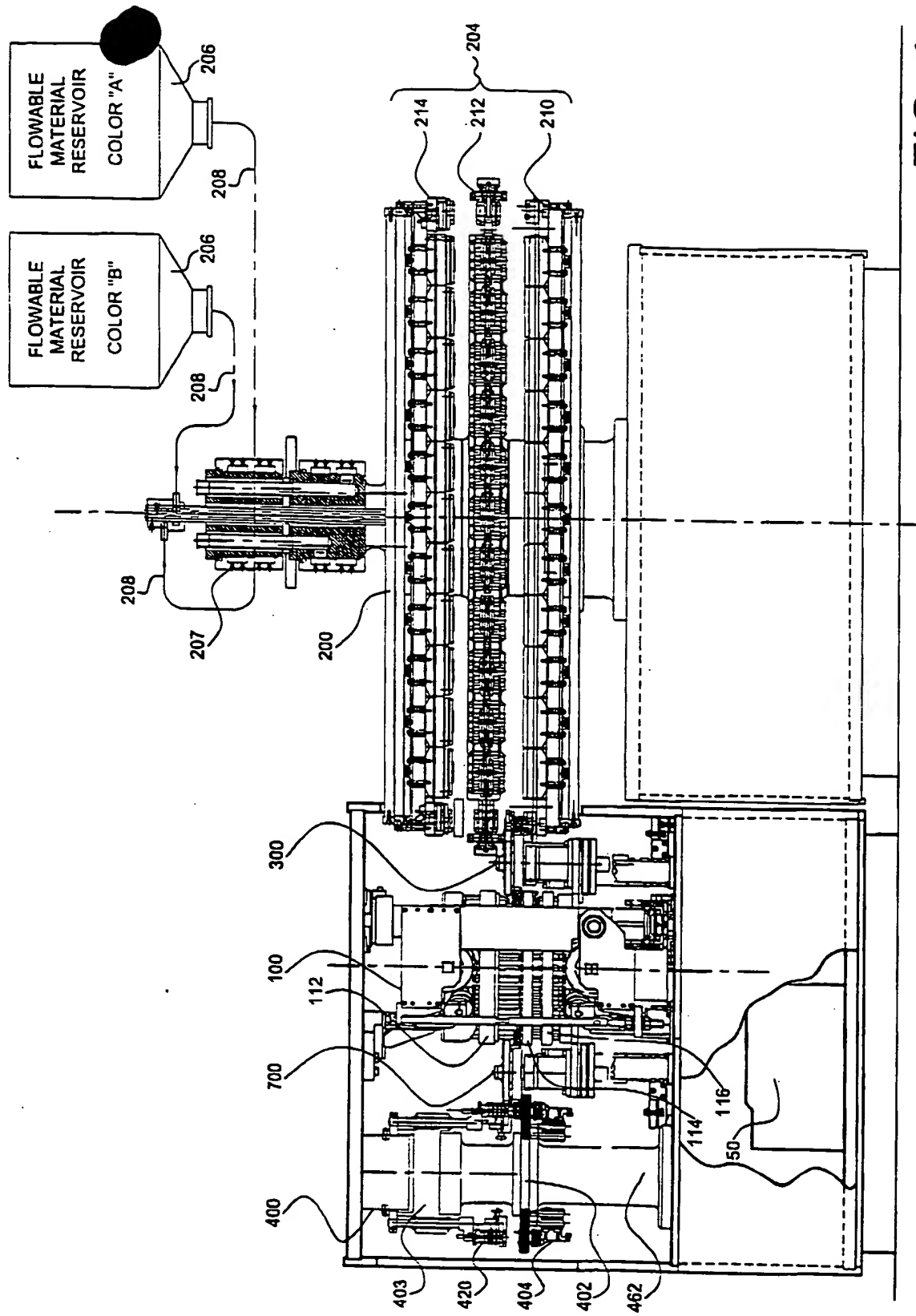


FIG. 4

FIG. 5

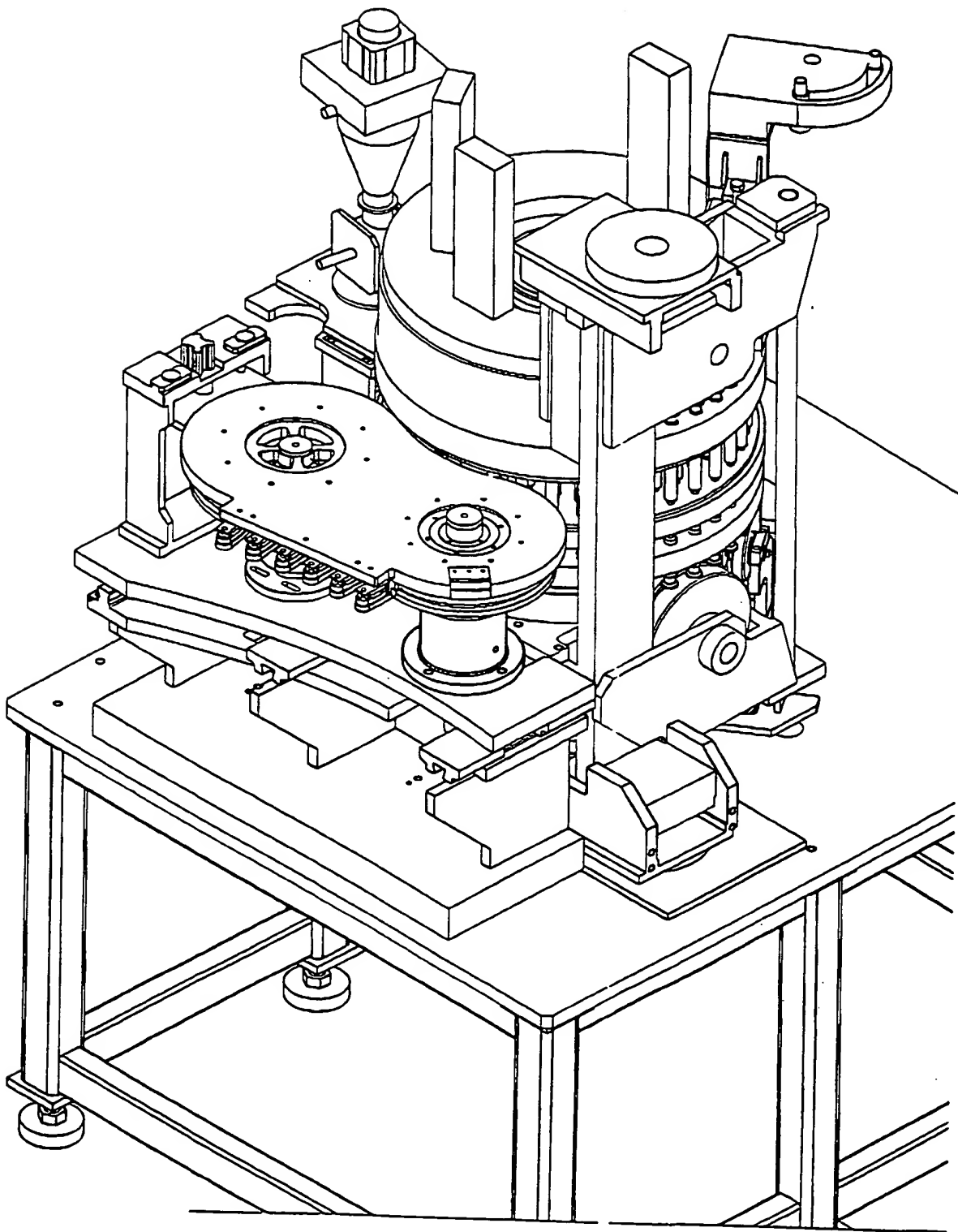


FIG. 5

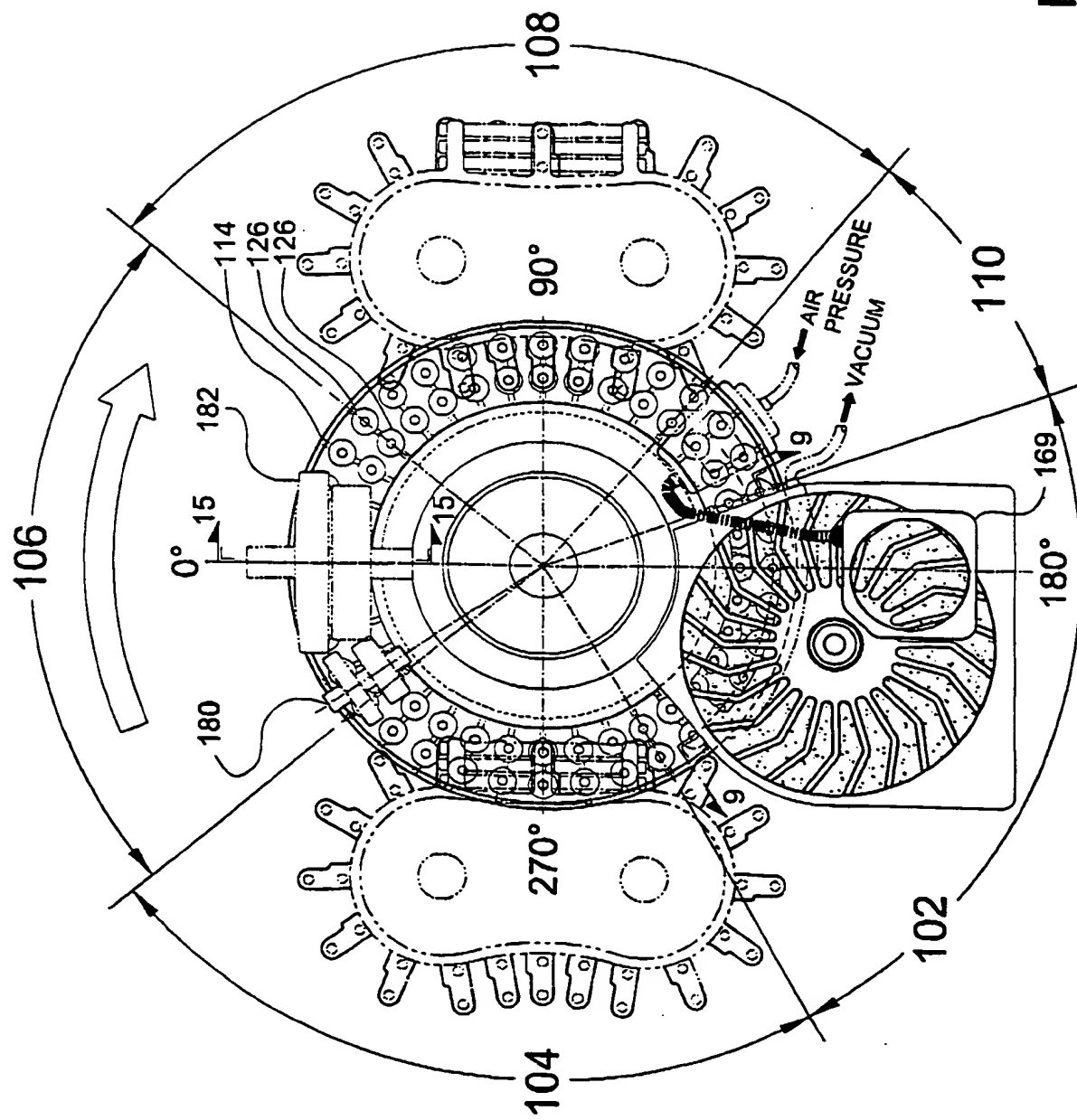


FIG. 6

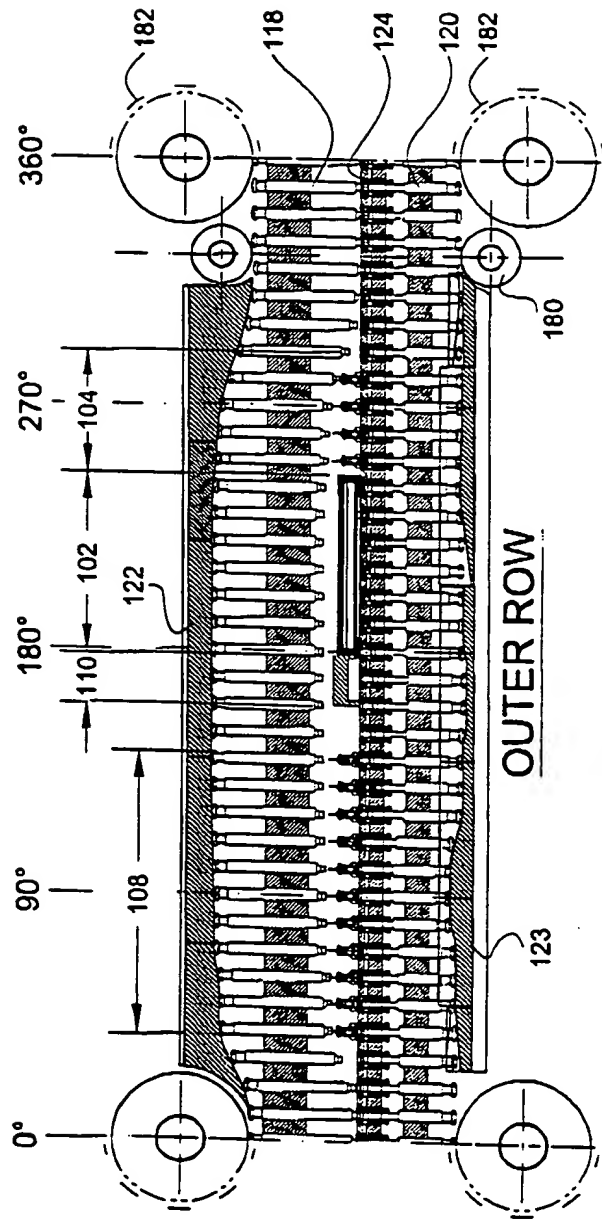


FIG. 7

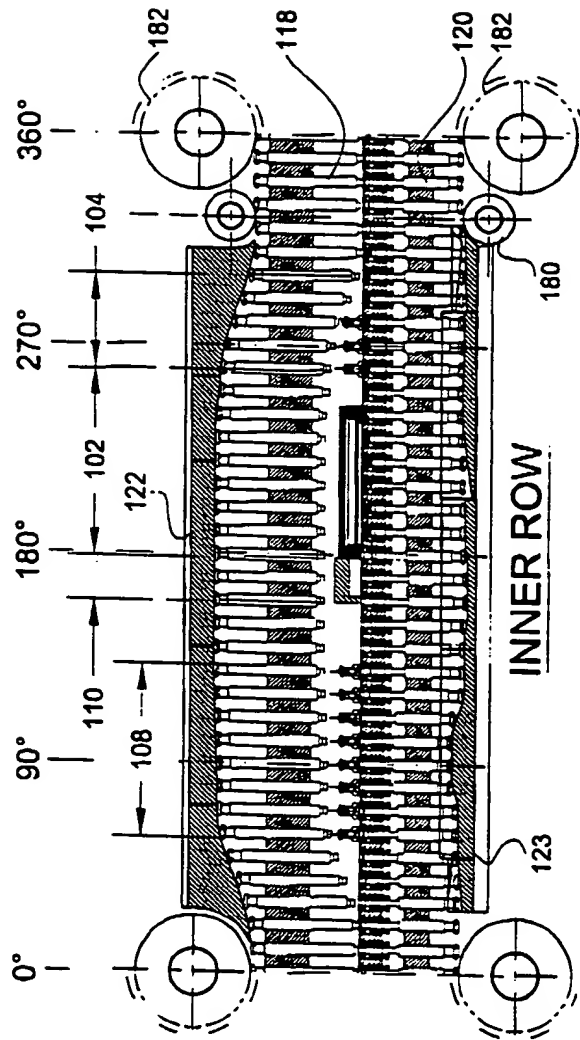


FIG. 8

Figure 1 is a cross-sectional view of a multi-layered structure. The top layer is labeled 122. Below it is a layer with diagonal hatching, labeled 154. A series of vertical rods, labeled 118, pass through this hatched layer. The rods are supported by a base layer, labeled 148. A horizontal arrow points to the right, indicating a direction of movement or flow. Below the rods, a horizontal line is labeled 171. A horizontal arrow points to the right, indicating a direction of movement or flow. The space between the rods is labeled "VACUUM ZONE". Below the vacuum zone is a layer with diagonal hatching, labeled 131. Below this is a layer with diagonal hatching, labeled 124. Below this is a layer with diagonal hatching, labeled 126. Below this is a layer with diagonal hatching, labeled 120. Below this is a layer with diagonal hatching, labeled 116. Below this is a layer with diagonal hatching, labeled 114. Below this is a layer with diagonal hatching, labeled 123. Below this is a layer with diagonal hatching, labeled 154. A horizontal arrow points to the right, indicating a direction of movement or flow. The space between the rods is labeled "VACUUM ZONE".

FIG. 9

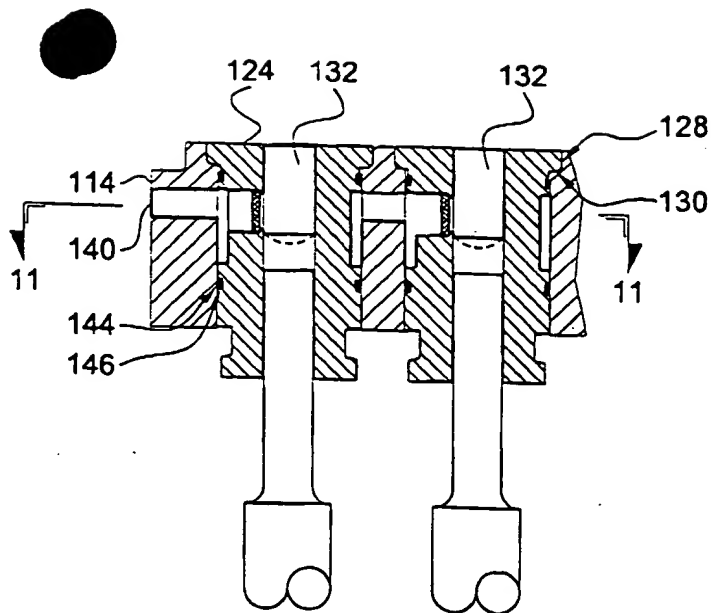


FIG. 10

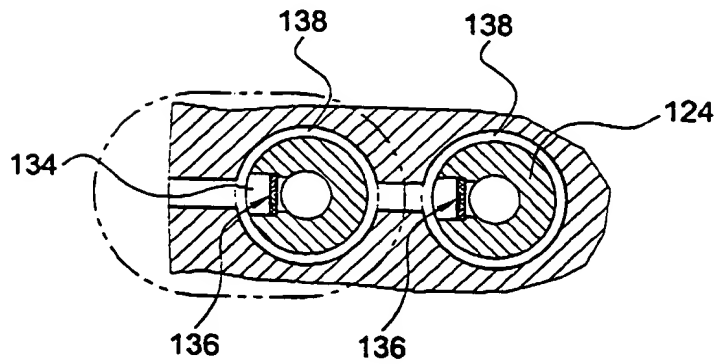


FIG. 11

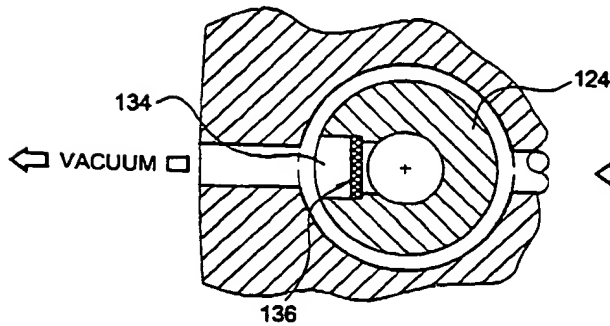


FIG. 12

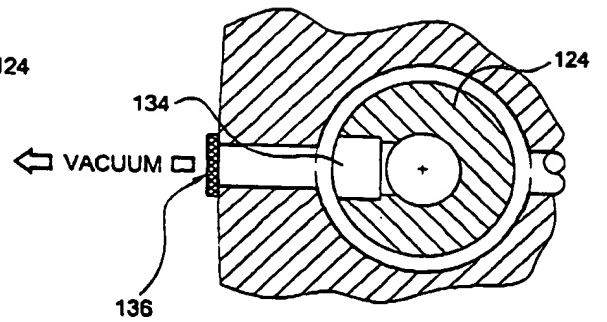


FIG. 12A

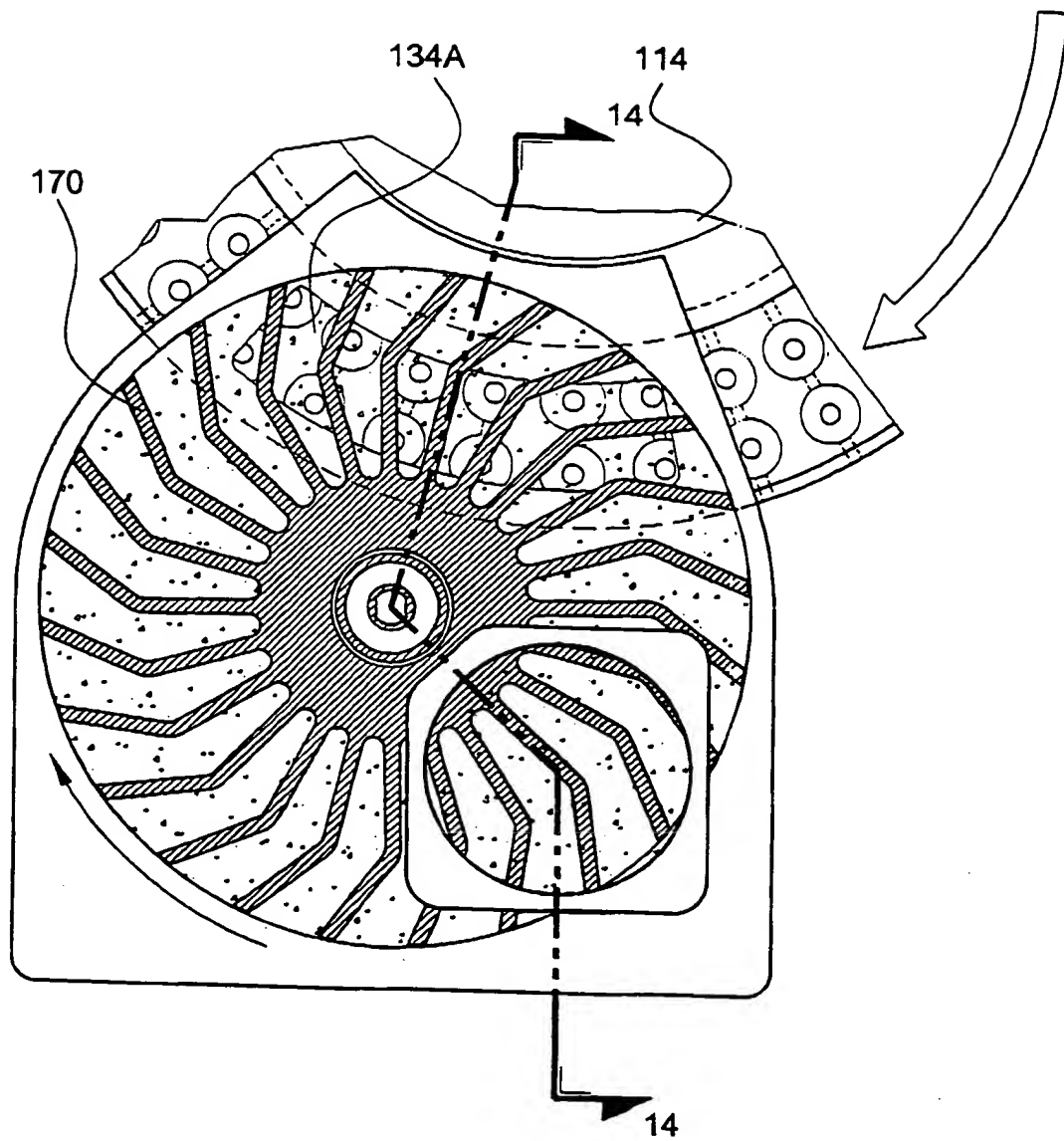


FIG. 13

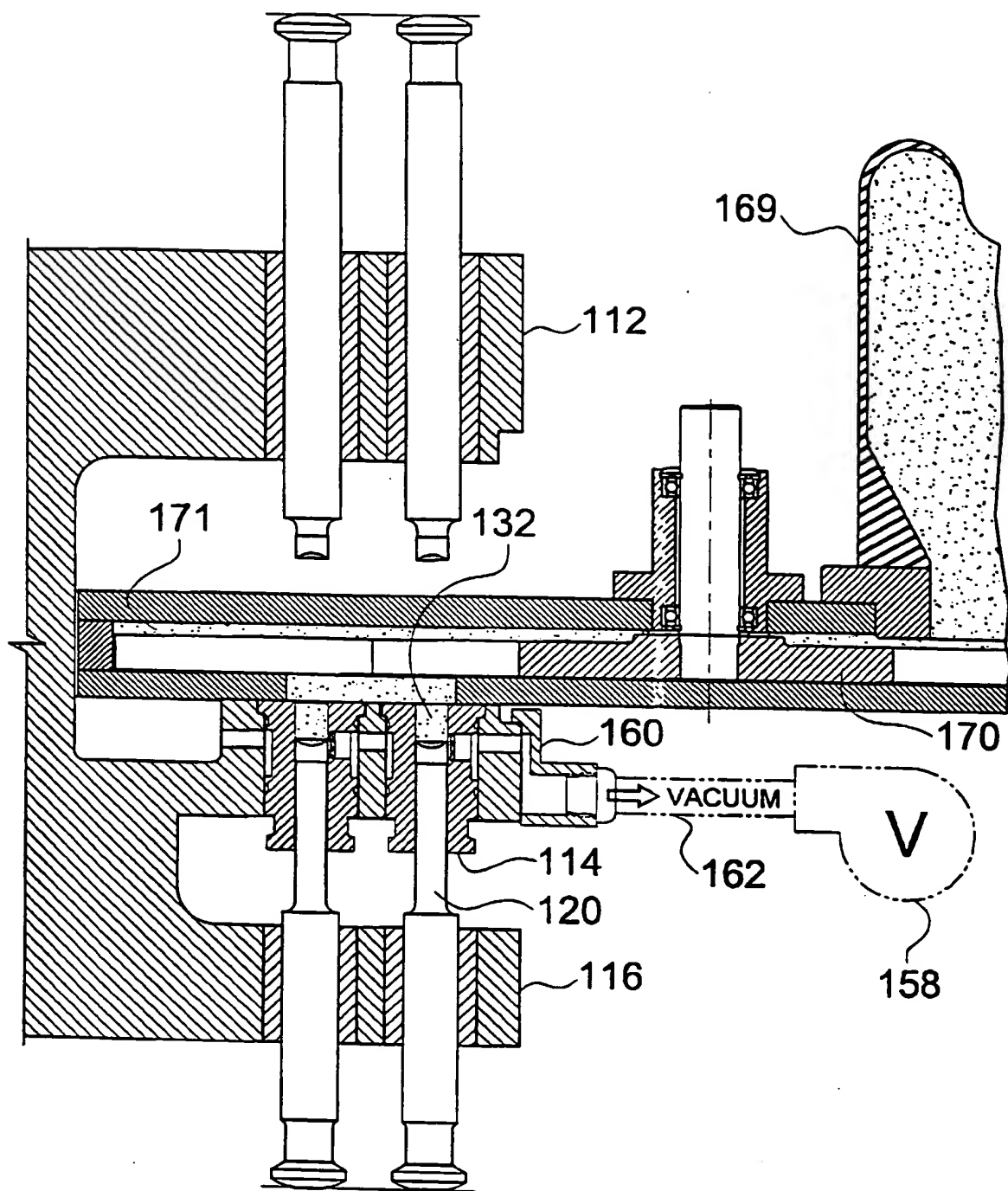


FIG. 14



FIG. 15

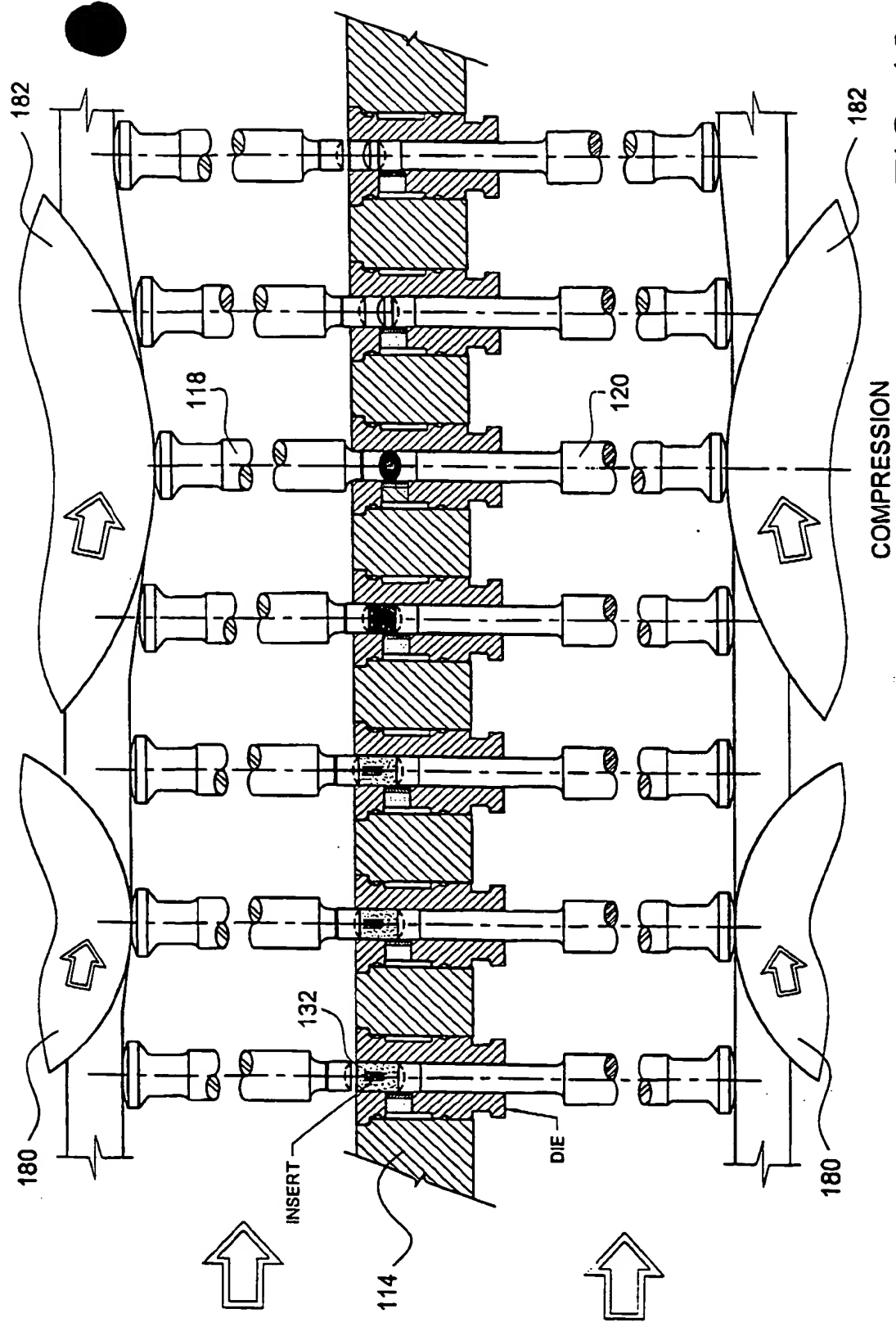


FIG. 16

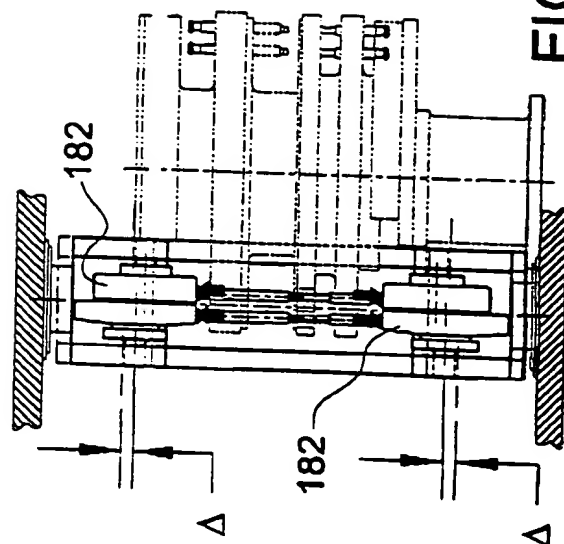
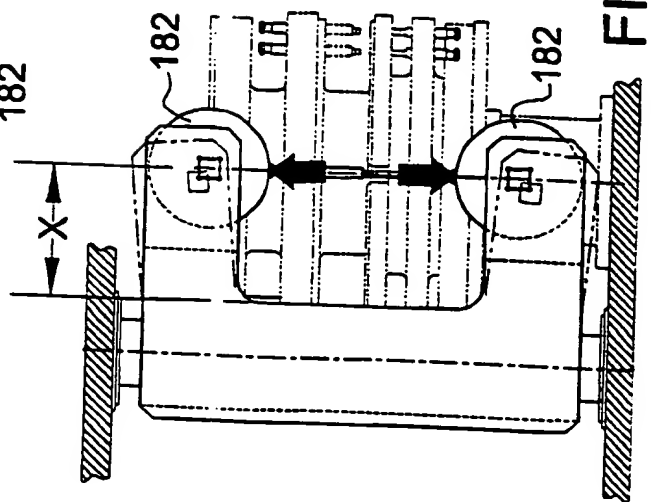
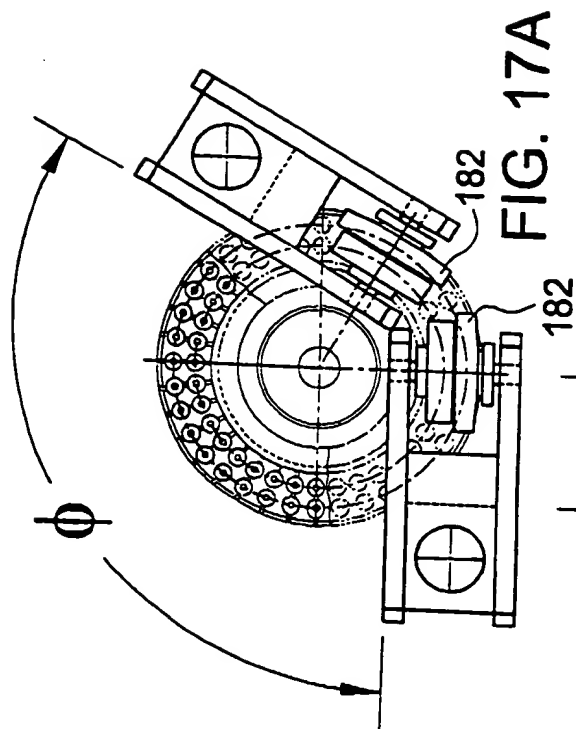


FIG. 17B

FIG. 17C

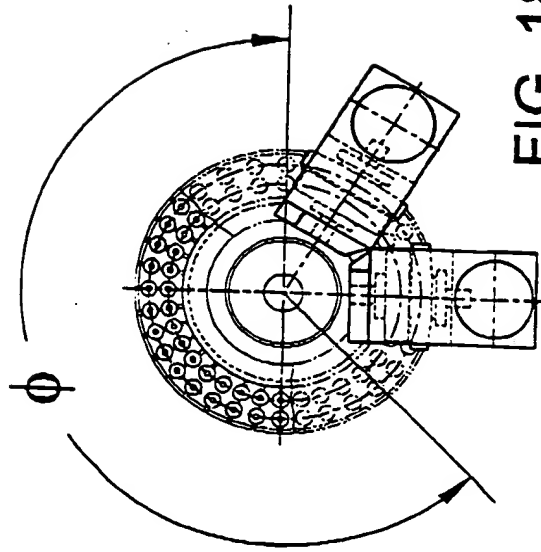


FIG. 18A

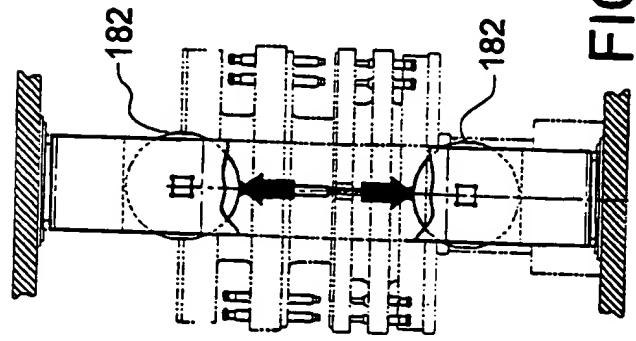


FIG. 18B

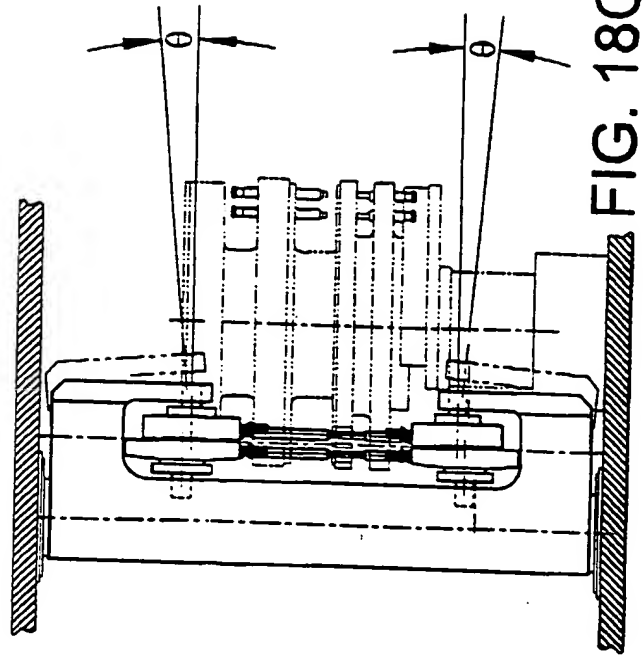


FIG. 18C

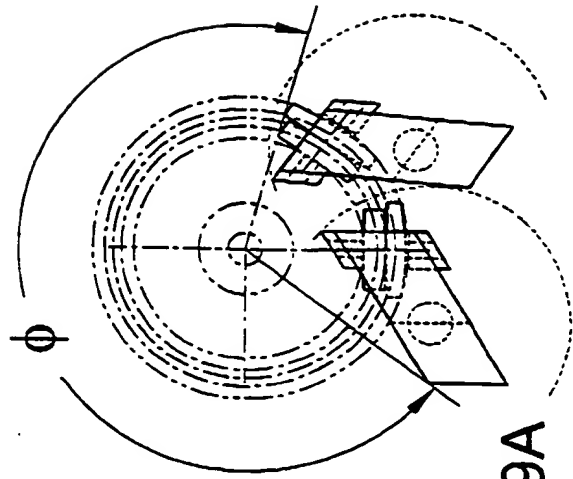


FIG. 19A

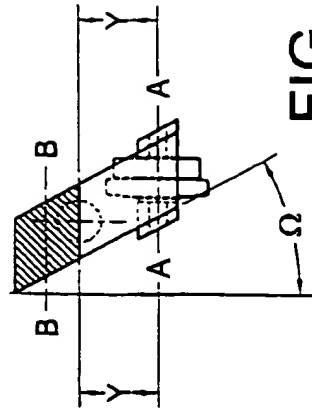


FIG. 19D

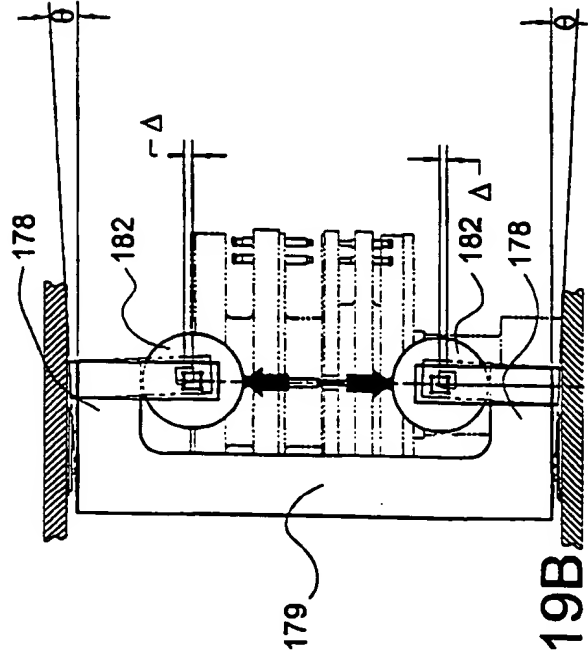


FIG. 19B

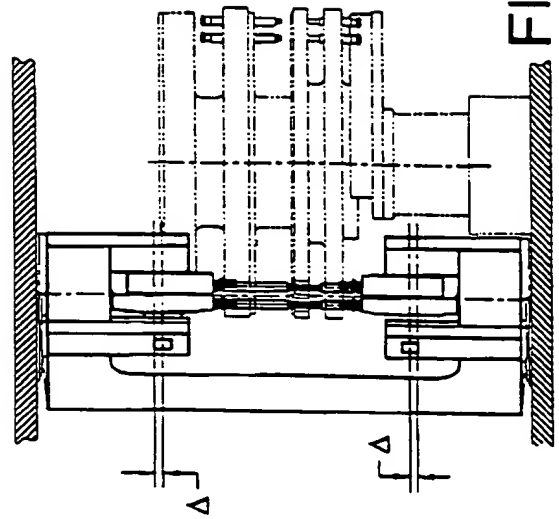


FIG. 19C

096639.0364

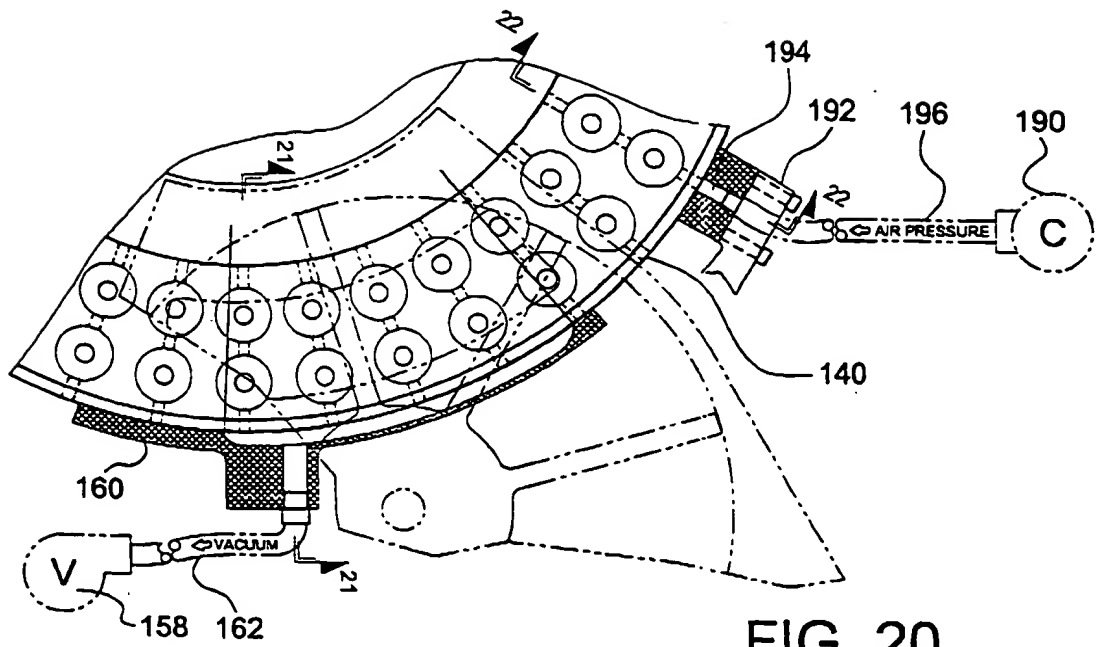


FIG. 20

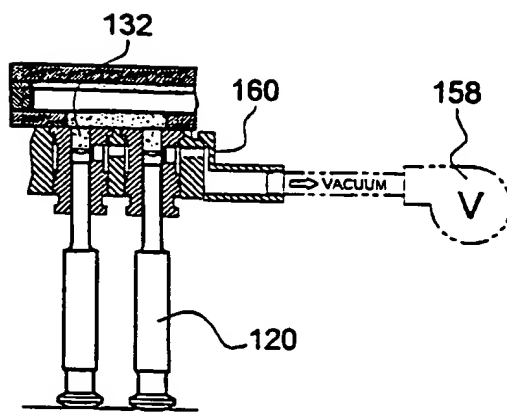


FIG. 21

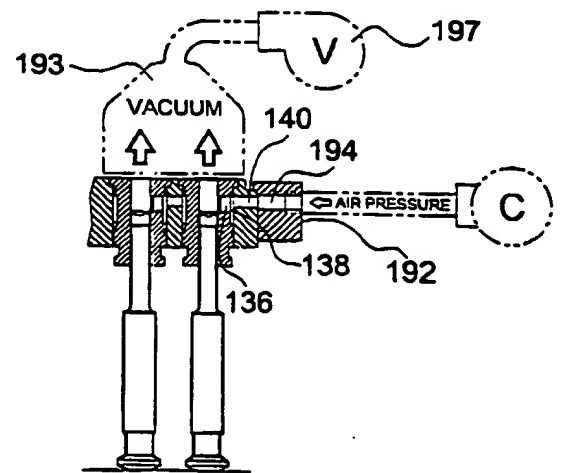
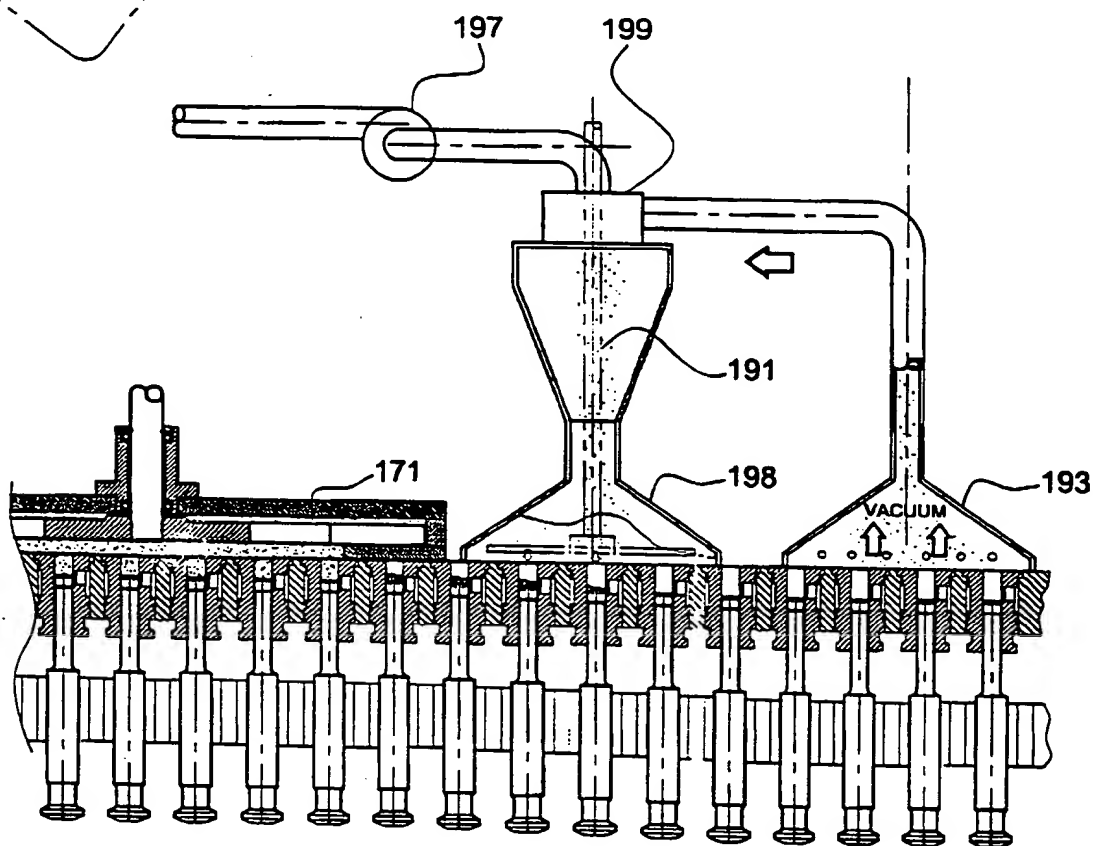
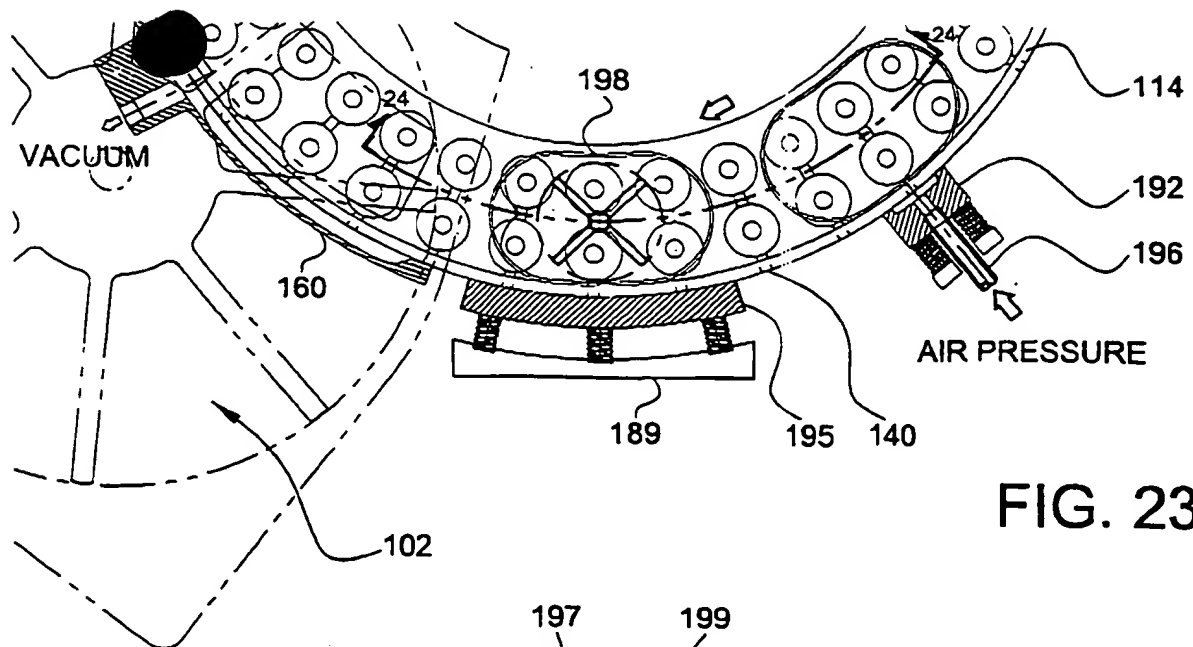


FIG. 22



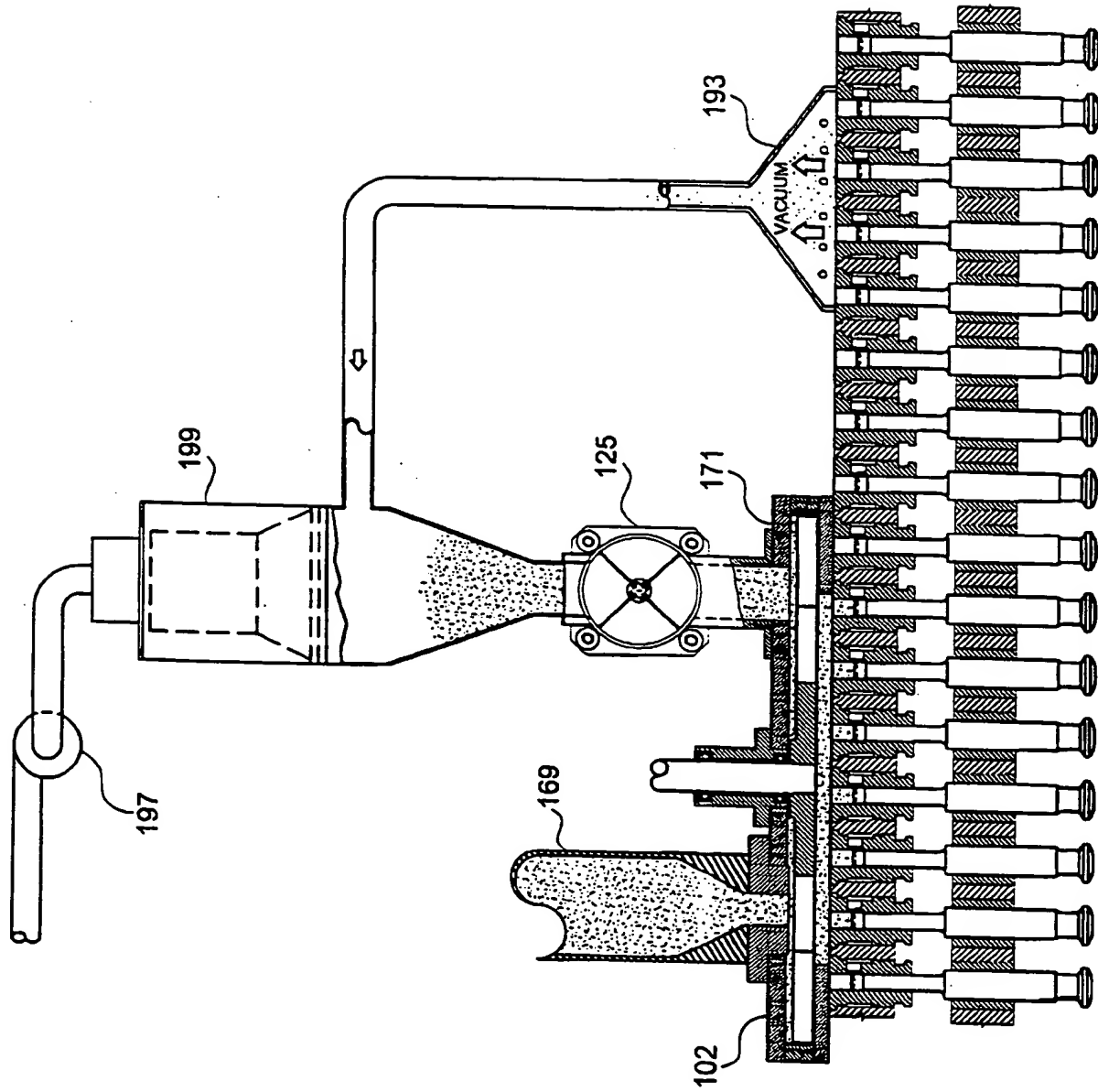


FIG. 25

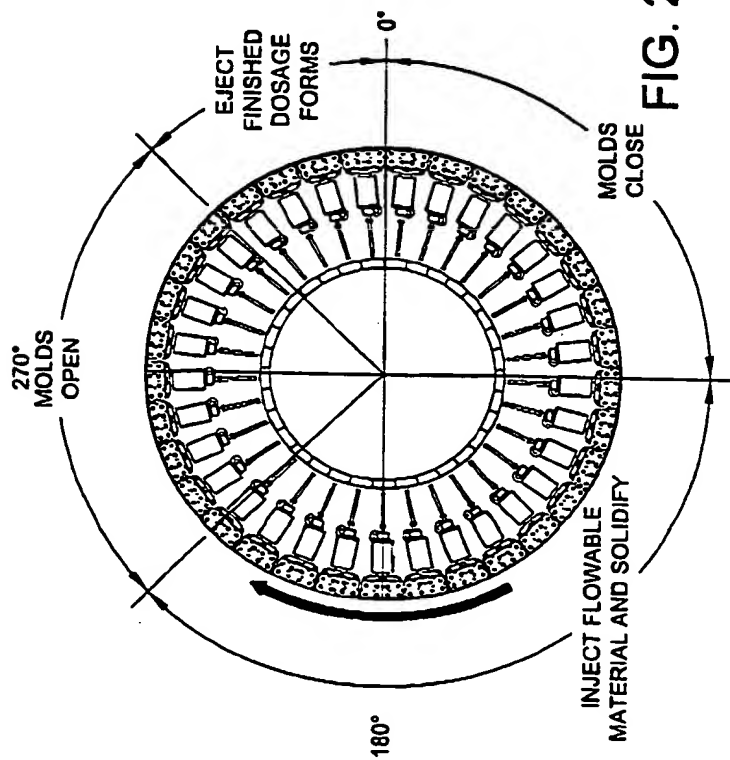


FIG. 26A

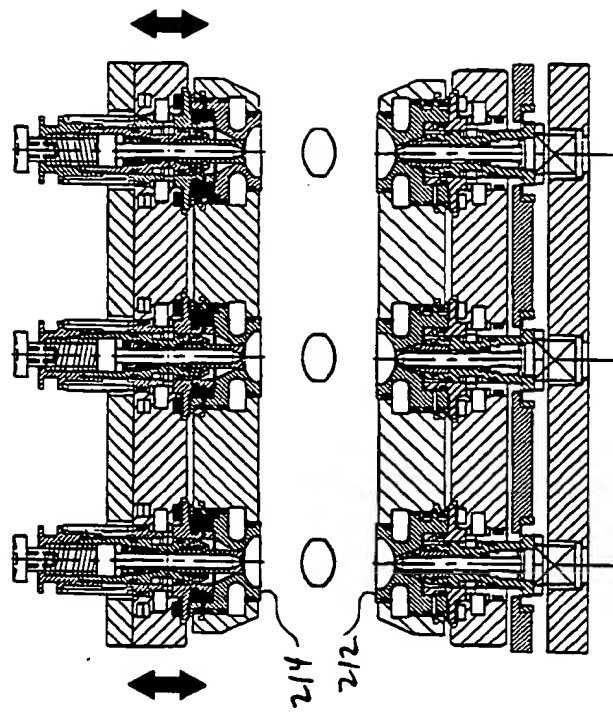


FIG. 26C

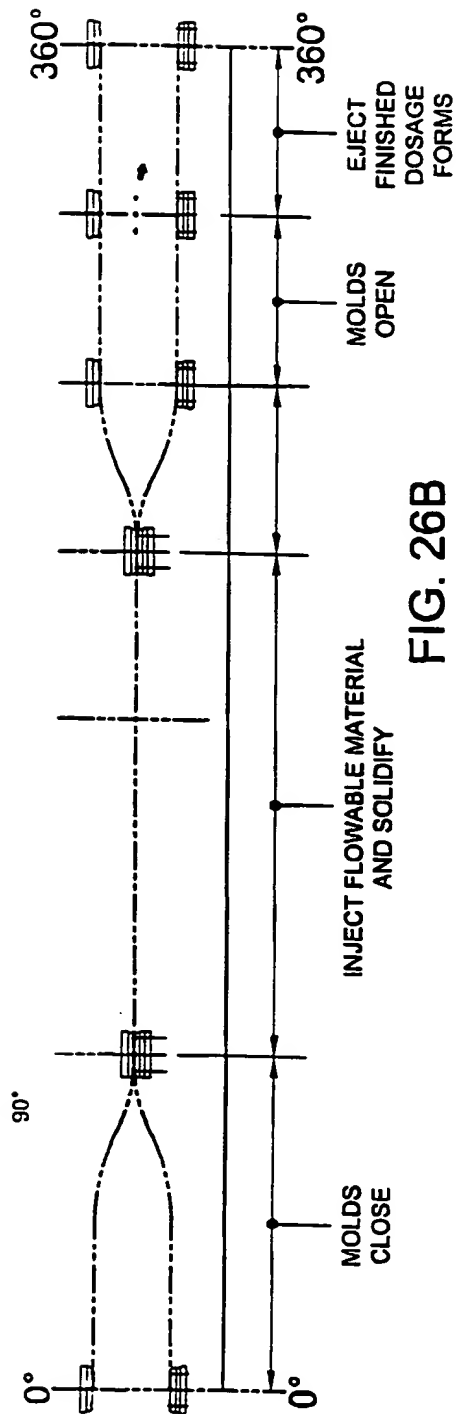
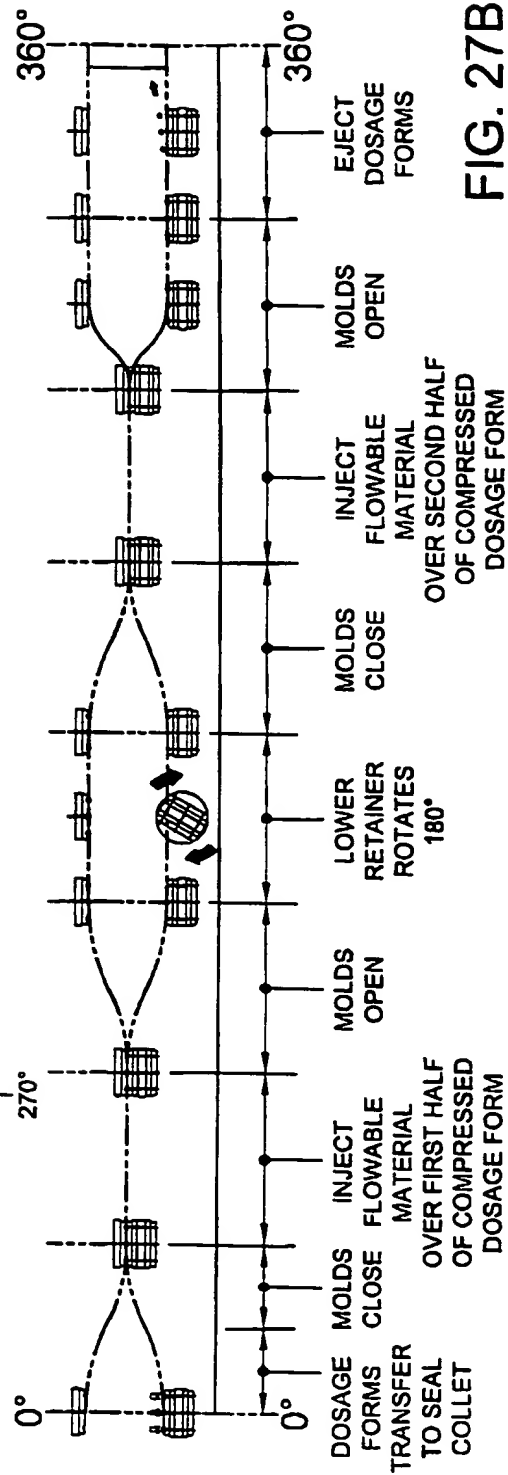
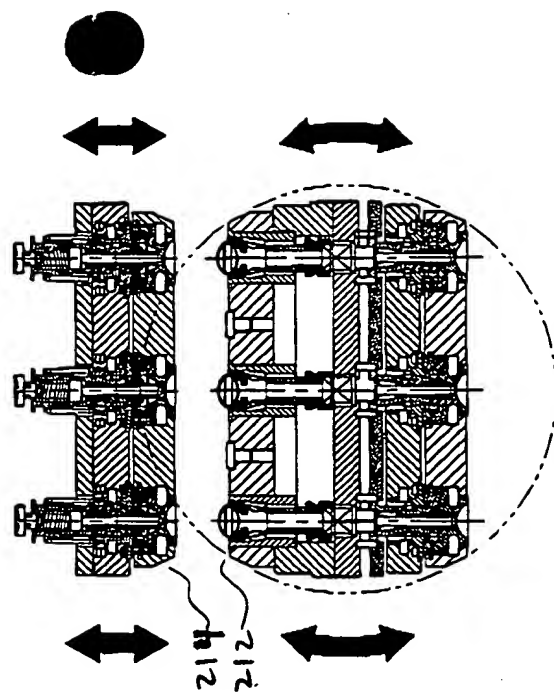
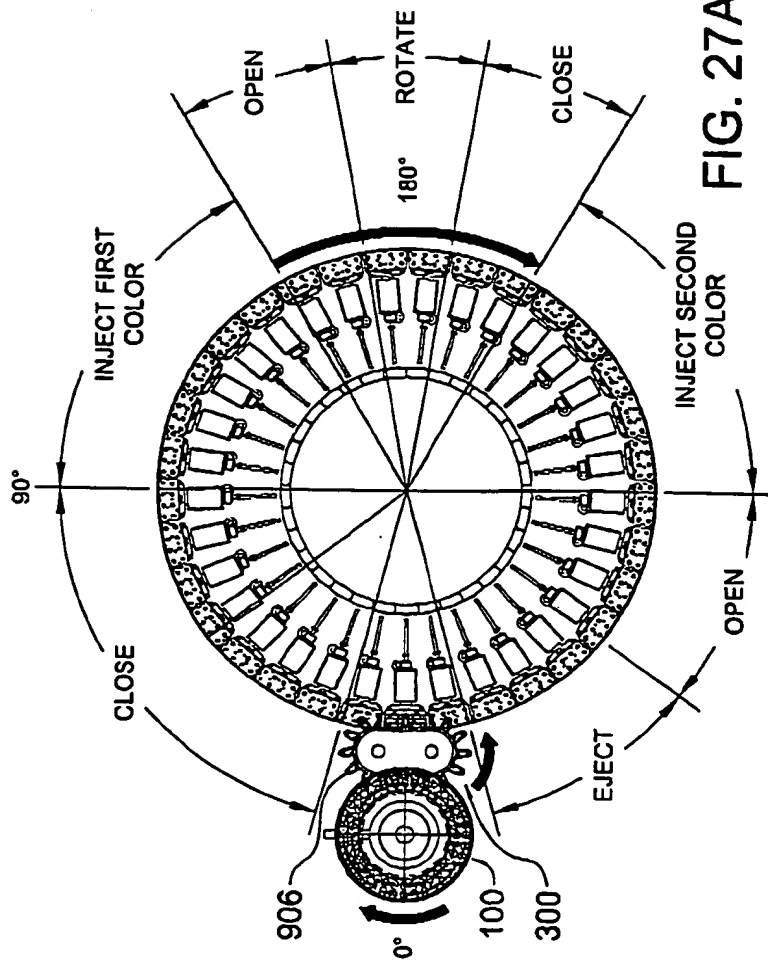


FIG. 26B



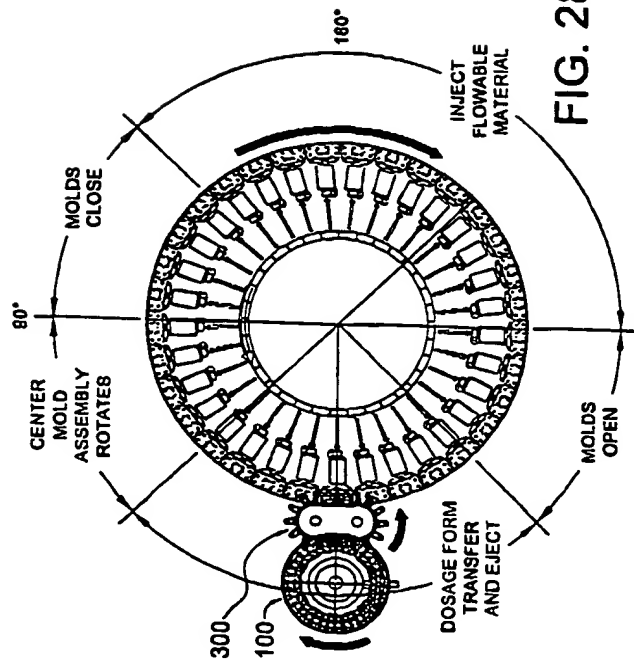


FIG. 28A

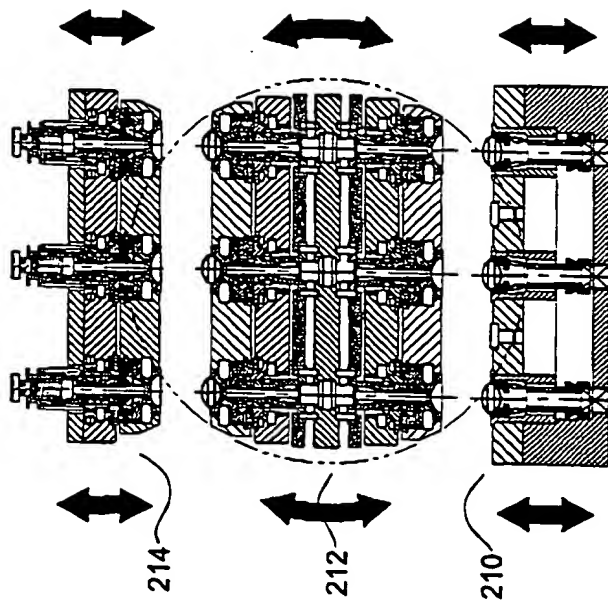


FIG. 28B

FIG. 28C (SECOND REVOLUTION)

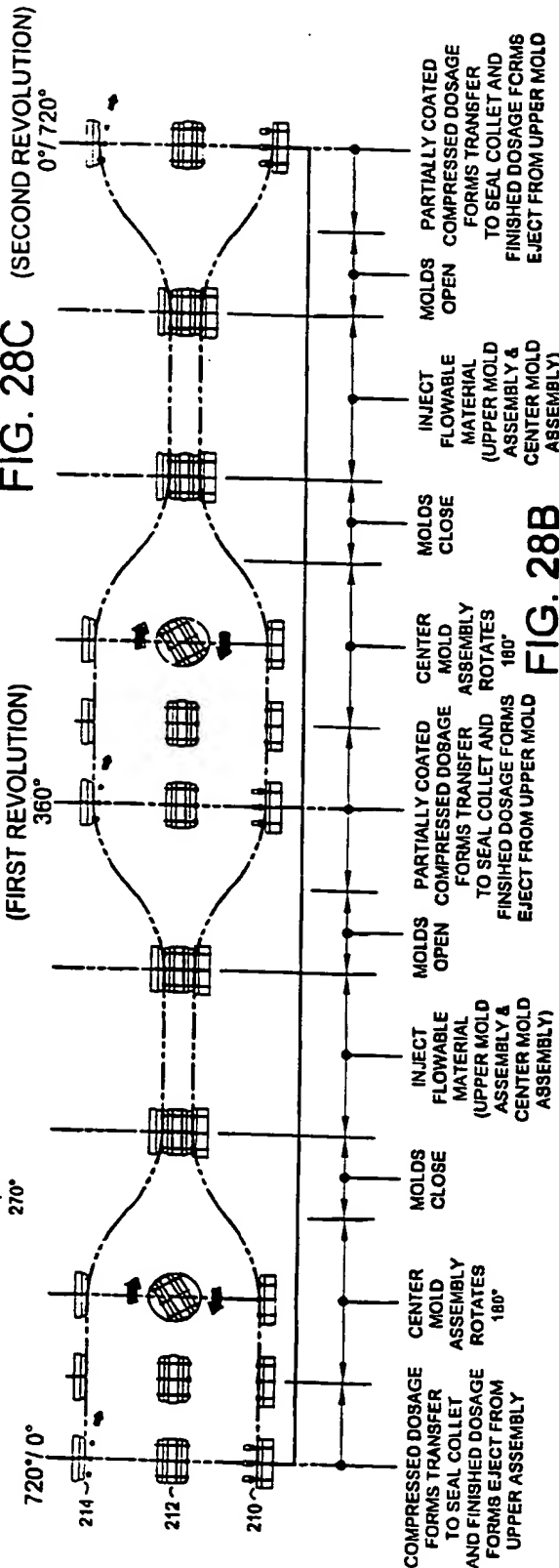


FIG. 29

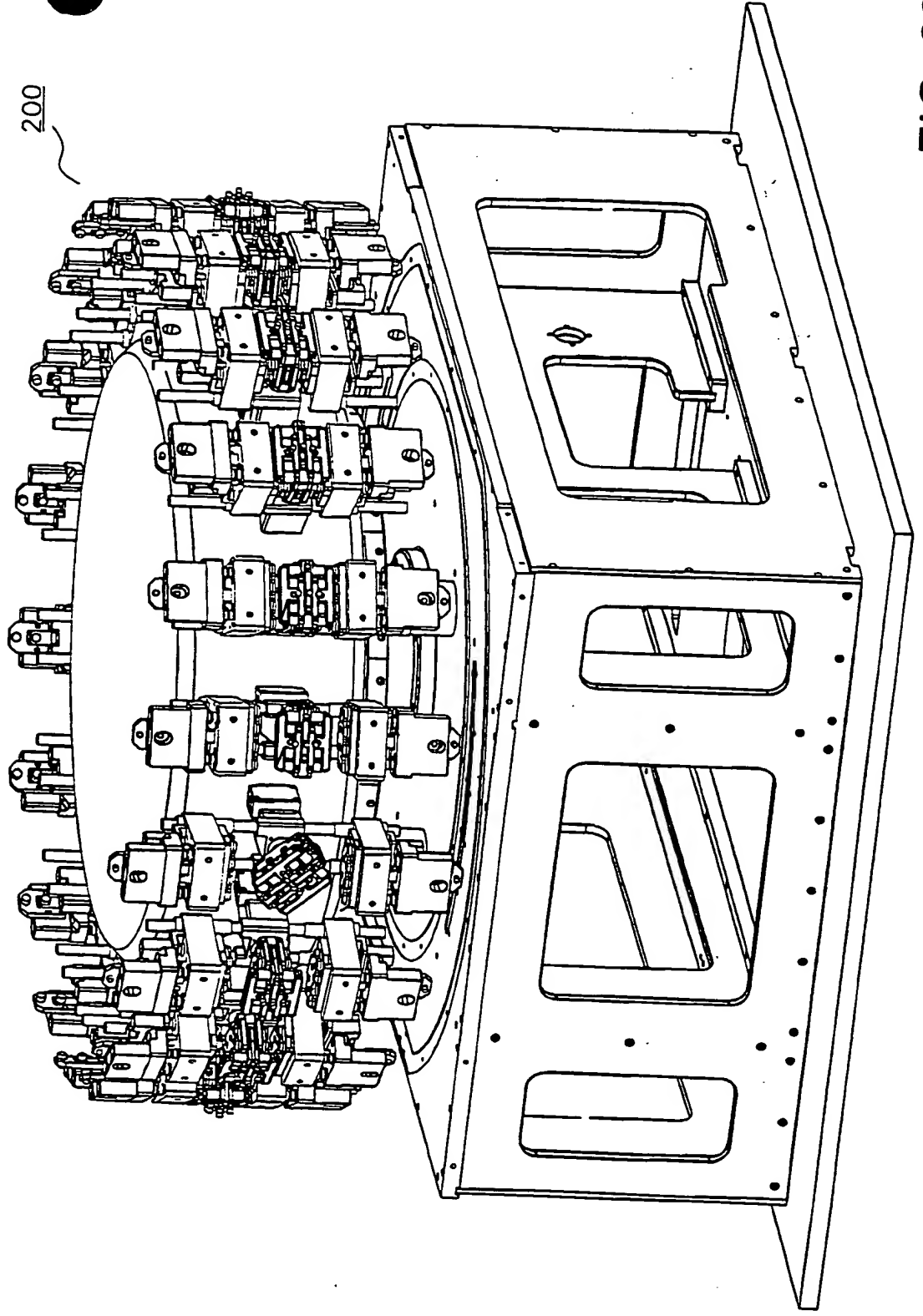


FIG. 29

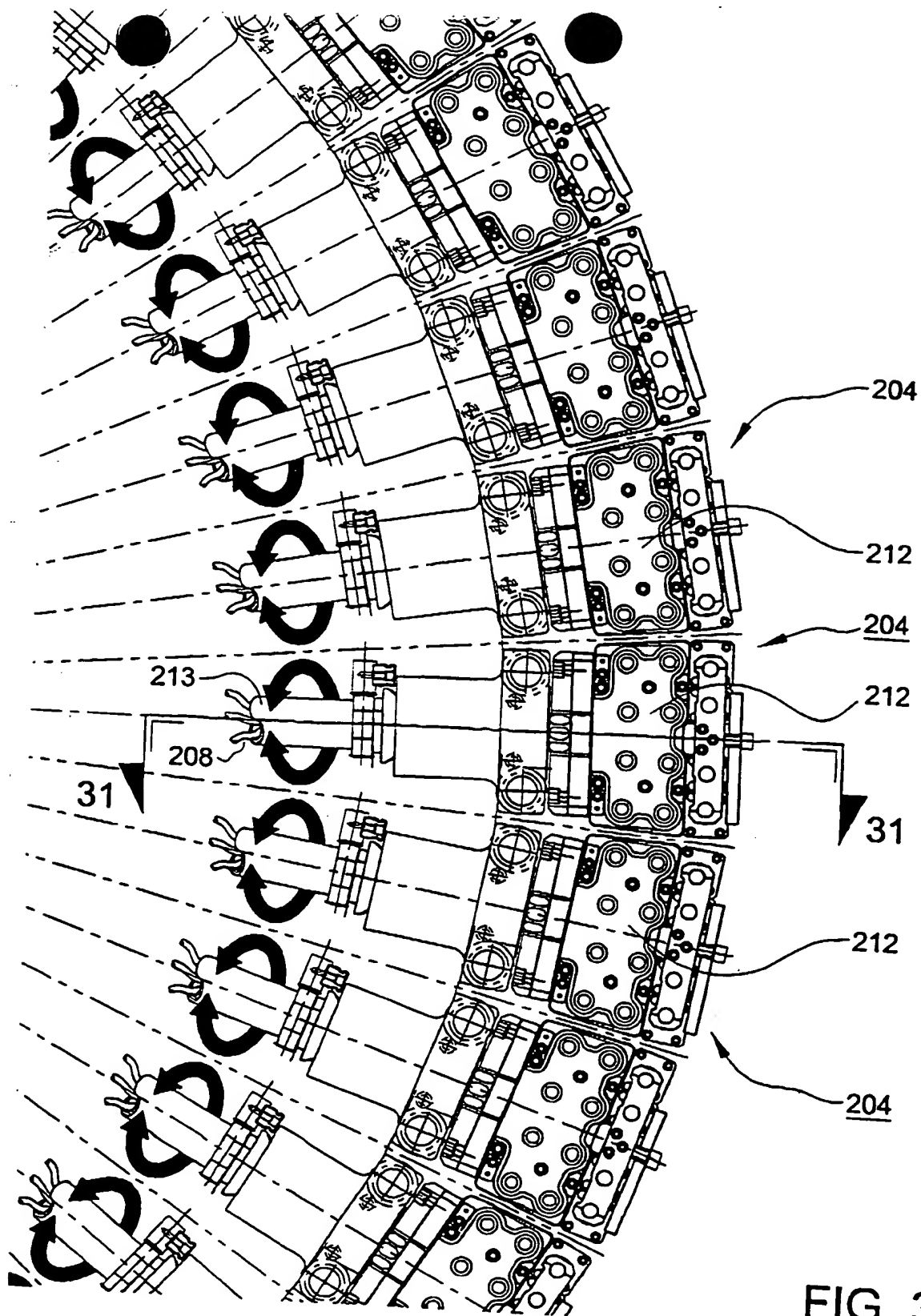


FIG. 30

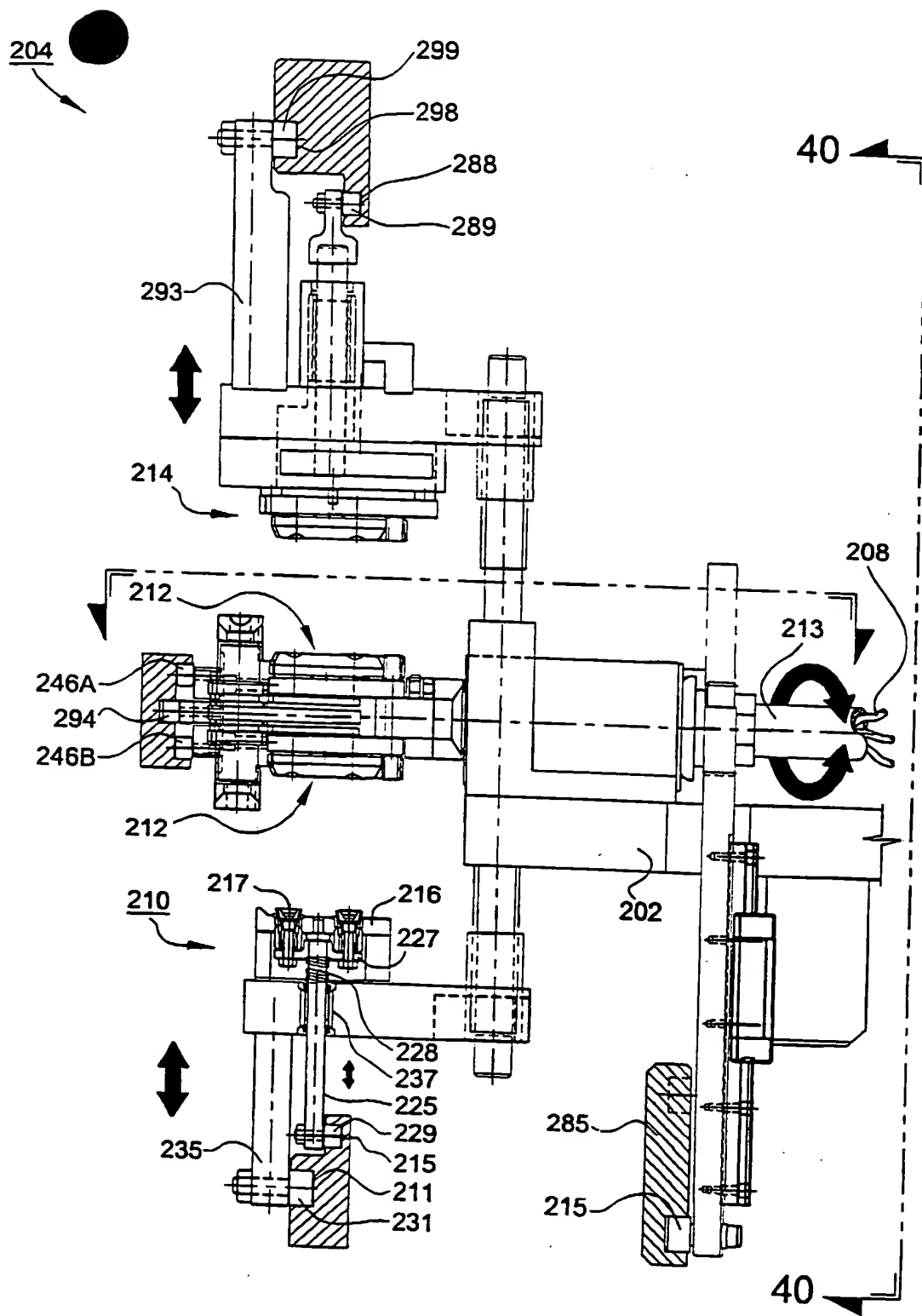


FIG. 31

403260" 62699660

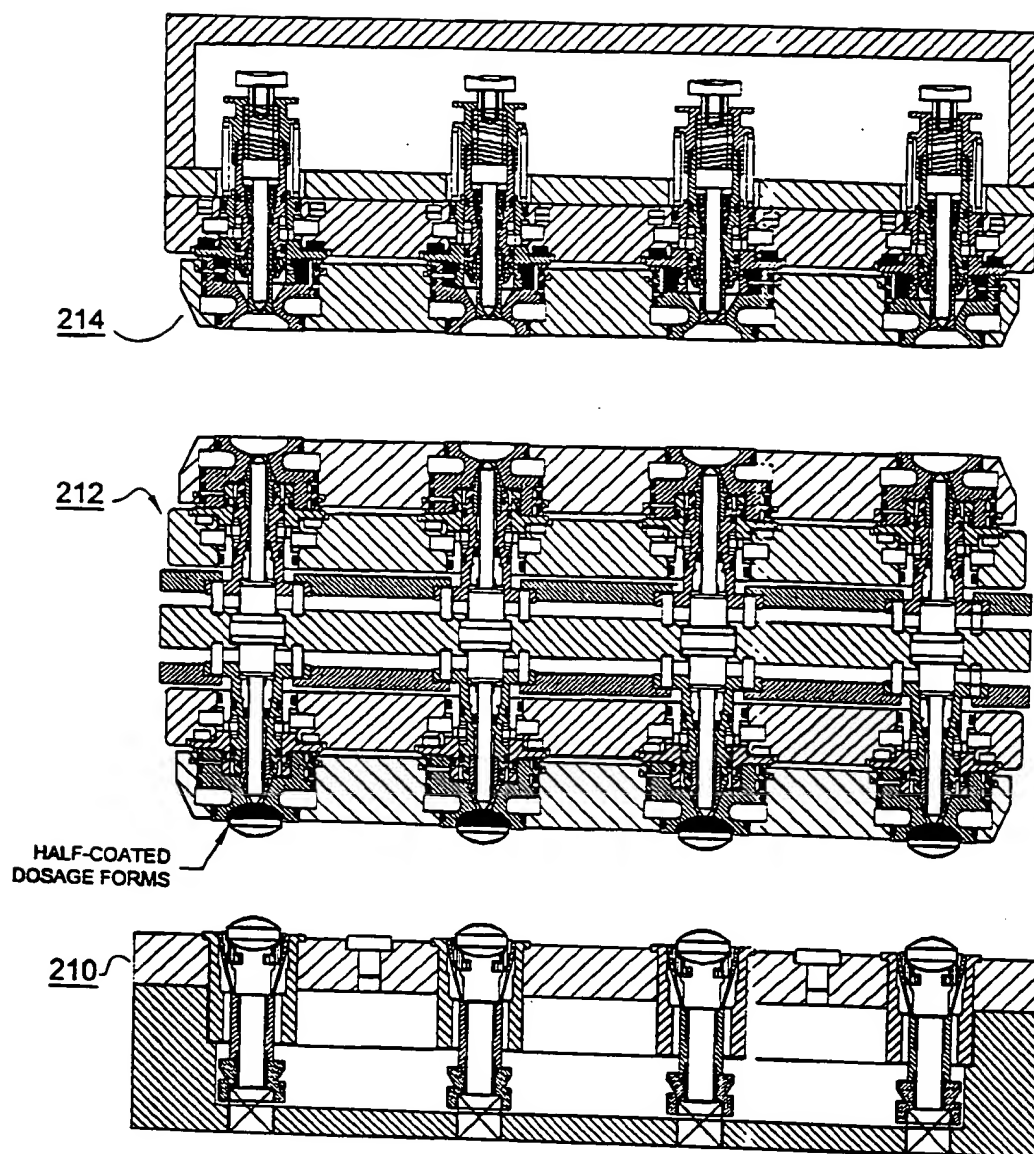


FIG. 32

FIG. 33

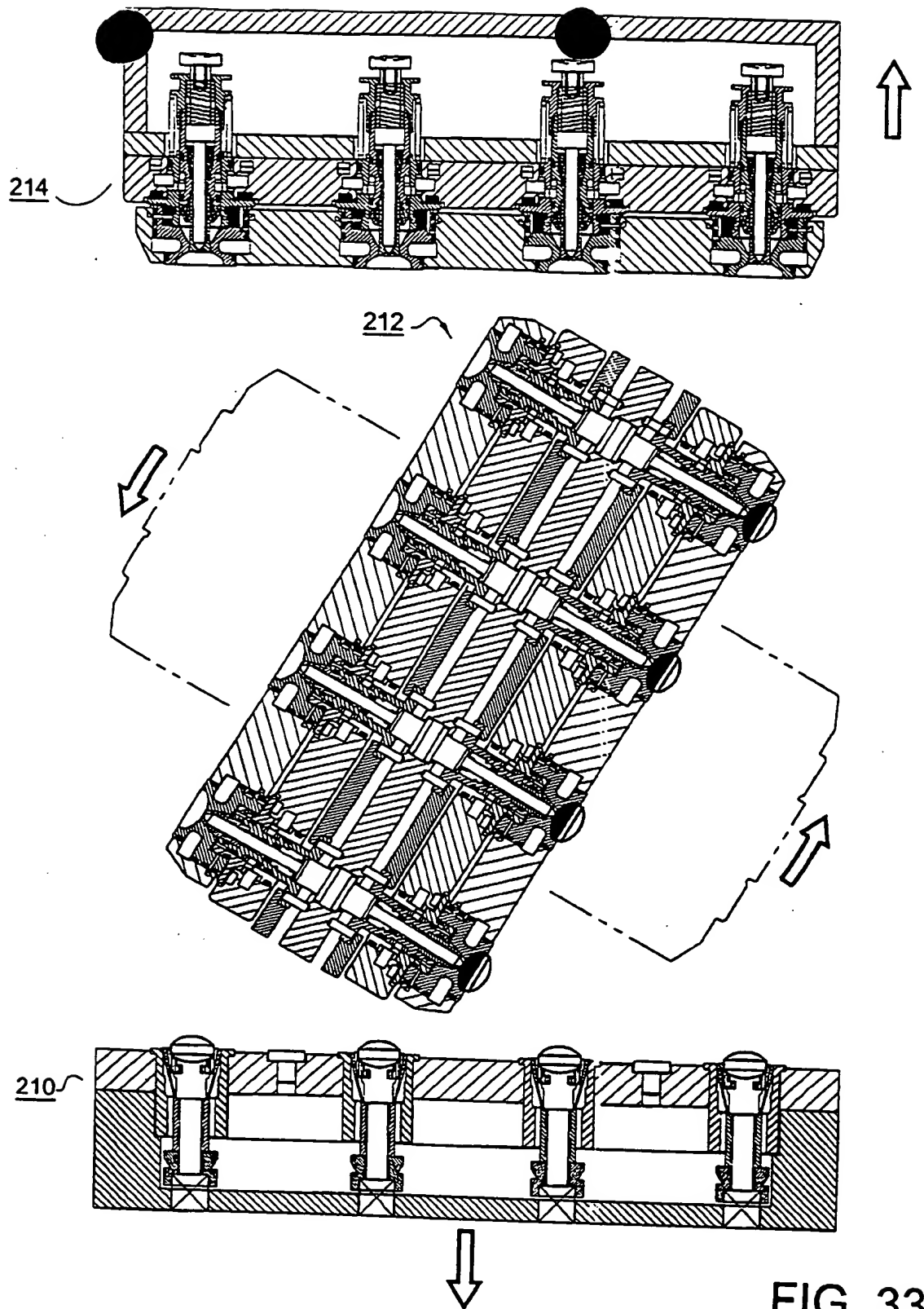


FIG. 33

FIG. 34

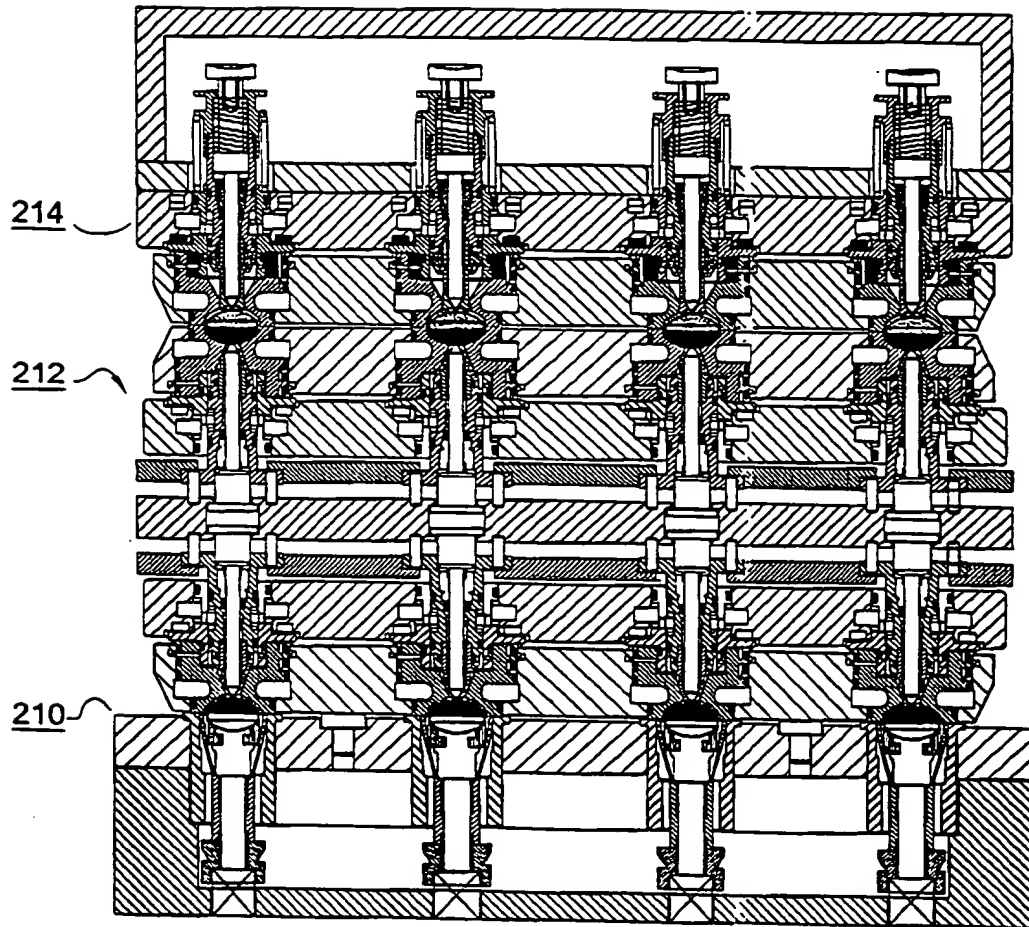


FIG. 34

Figure 1 illustrates a multi-layer printed circuit board assembly in three stages:

- 214:** Initial assembly showing four vertical vias and a top layer.
- 212:** Intermediate assembly showing a second layer added, with horizontal vias connecting the vertical ones.
- 210:** Final assembly showing a third layer added, with a complex multi-layer structure.

Figure 1 illustrates a multi-layer printed circuit board assembly in three stages:

- 214:** A cross-sectional view of the initial assembly. It shows a prepreg layer (hatched) with a central core layer (cross-hatched). Four vertical vias are formed through the prepreg layer, each containing a conductive paste (stippled) and a conductive paste (cross-hatched). The assembly is held together by a top metal layer (hatched).
- 212:** A cross-sectional view of the intermediate stage. Additional prepreg layers (hatched) are added to the assembly, increasing its thickness. The vertical vias are still present, and the central core layer remains visible.
- 210:** A cross-sectional view of the final stage. The assembly is now a multi-layer structure. A top prepreg layer (hatched) is added, and a top metal layer (hatched) is applied to the top surface. The vertical vias are still present, and the central core layer remains visible.

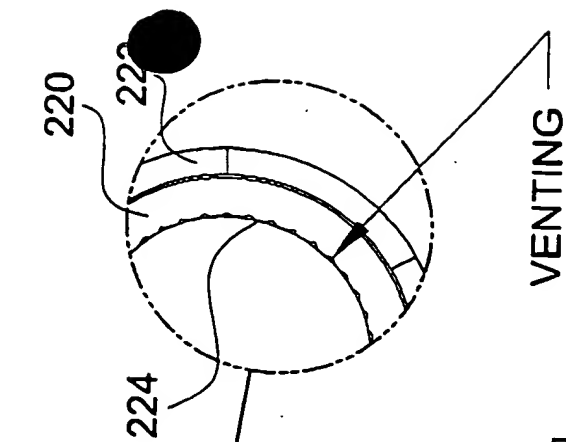


FIG. 38

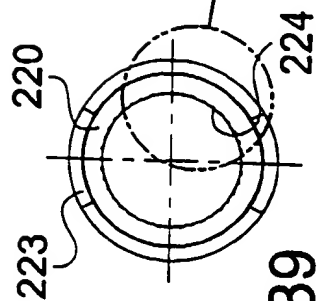


FIG. 39

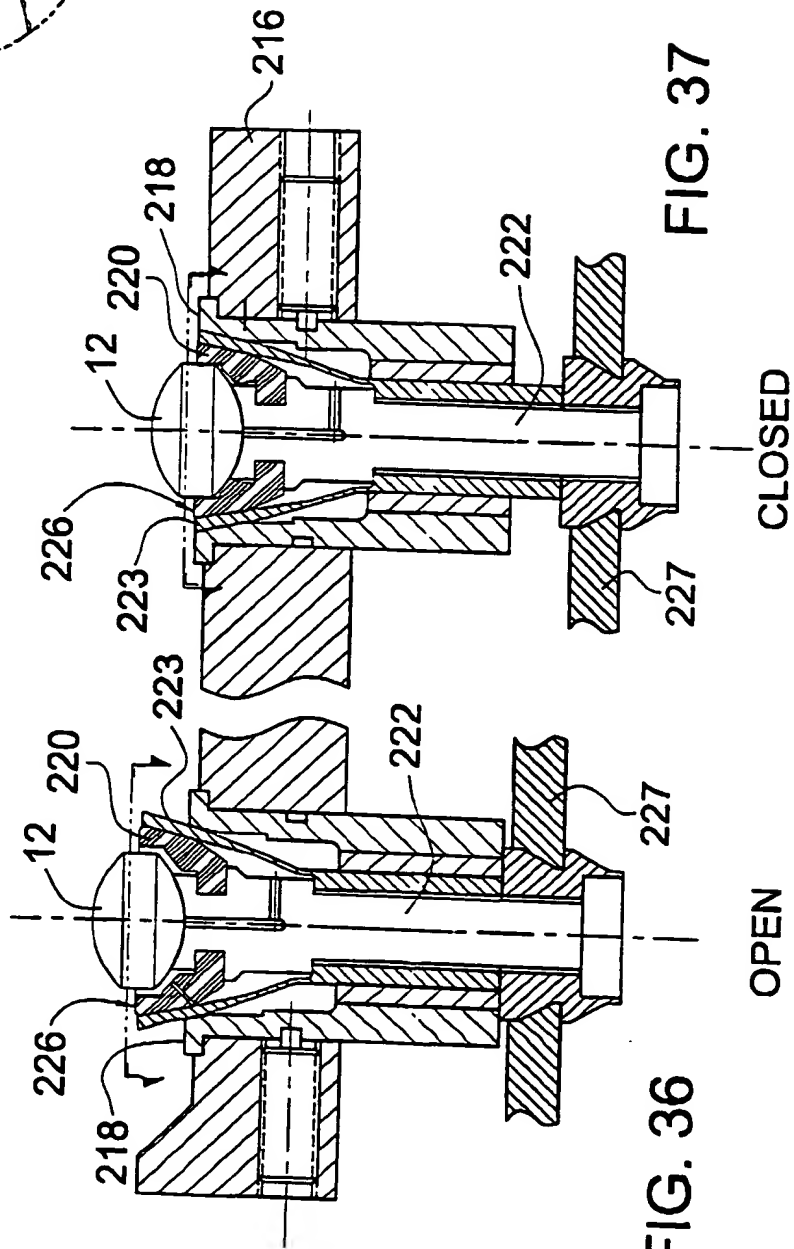


FIG. 36

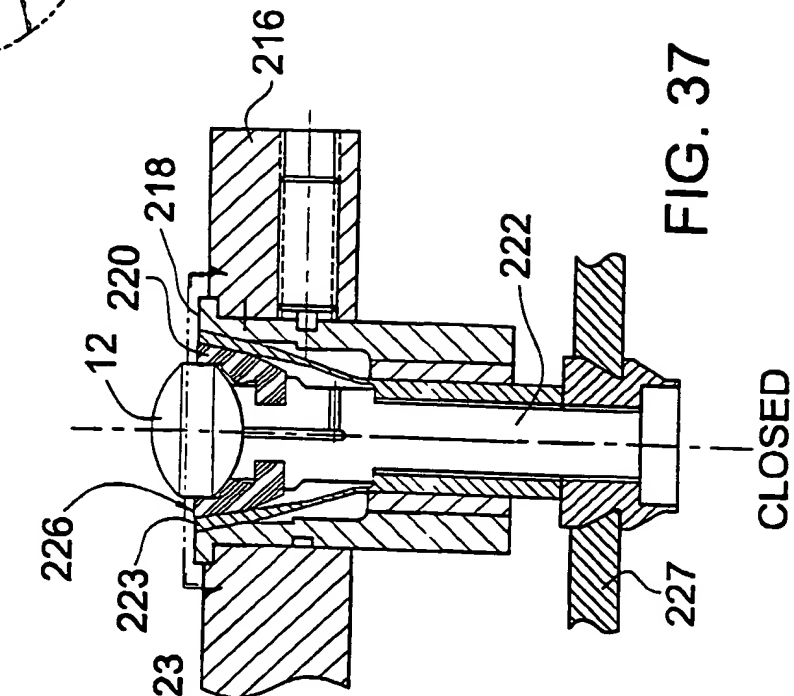


FIG. 37

VENTING

OPEN

CLOSED

FIG. 40

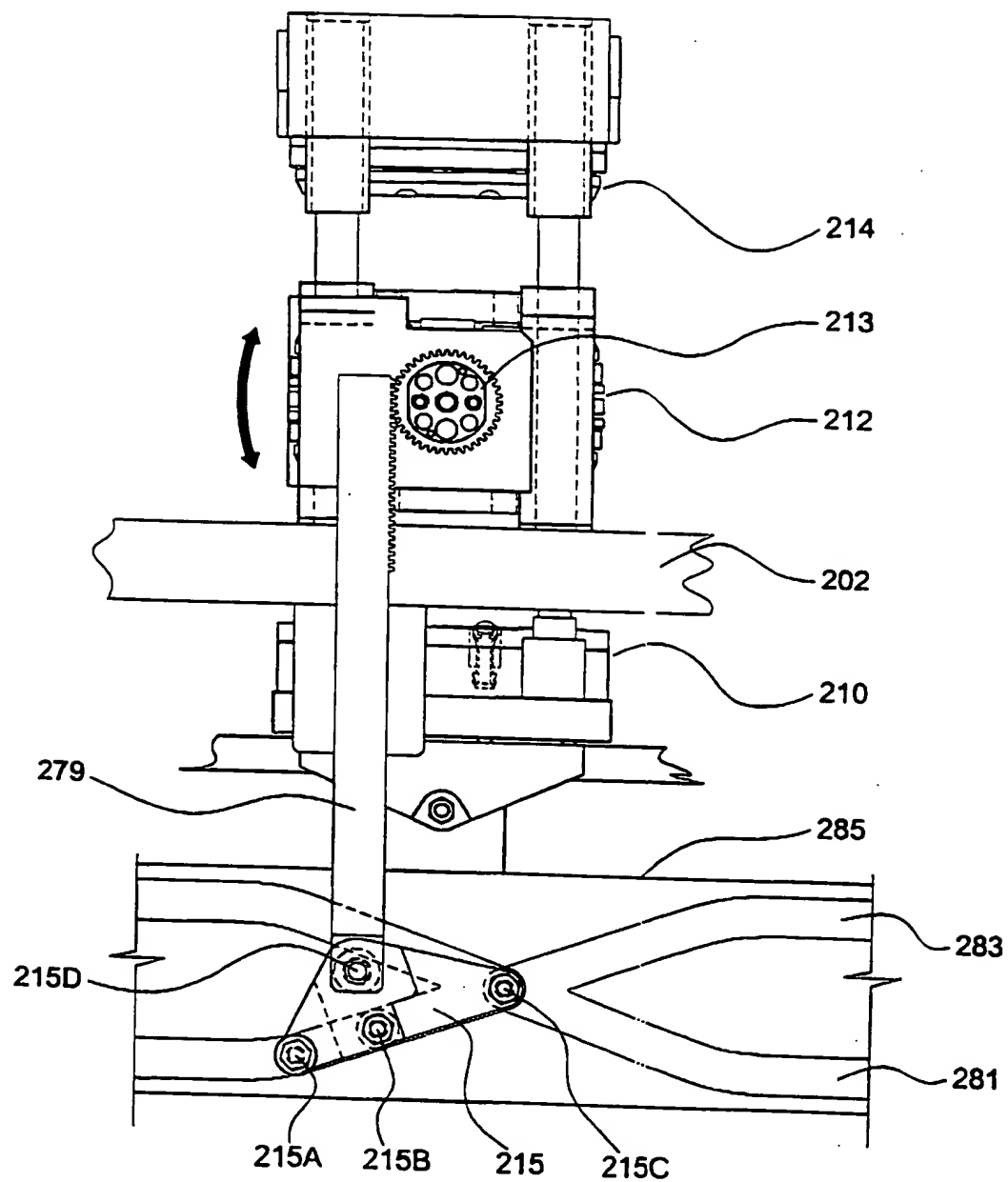


FIG. 40

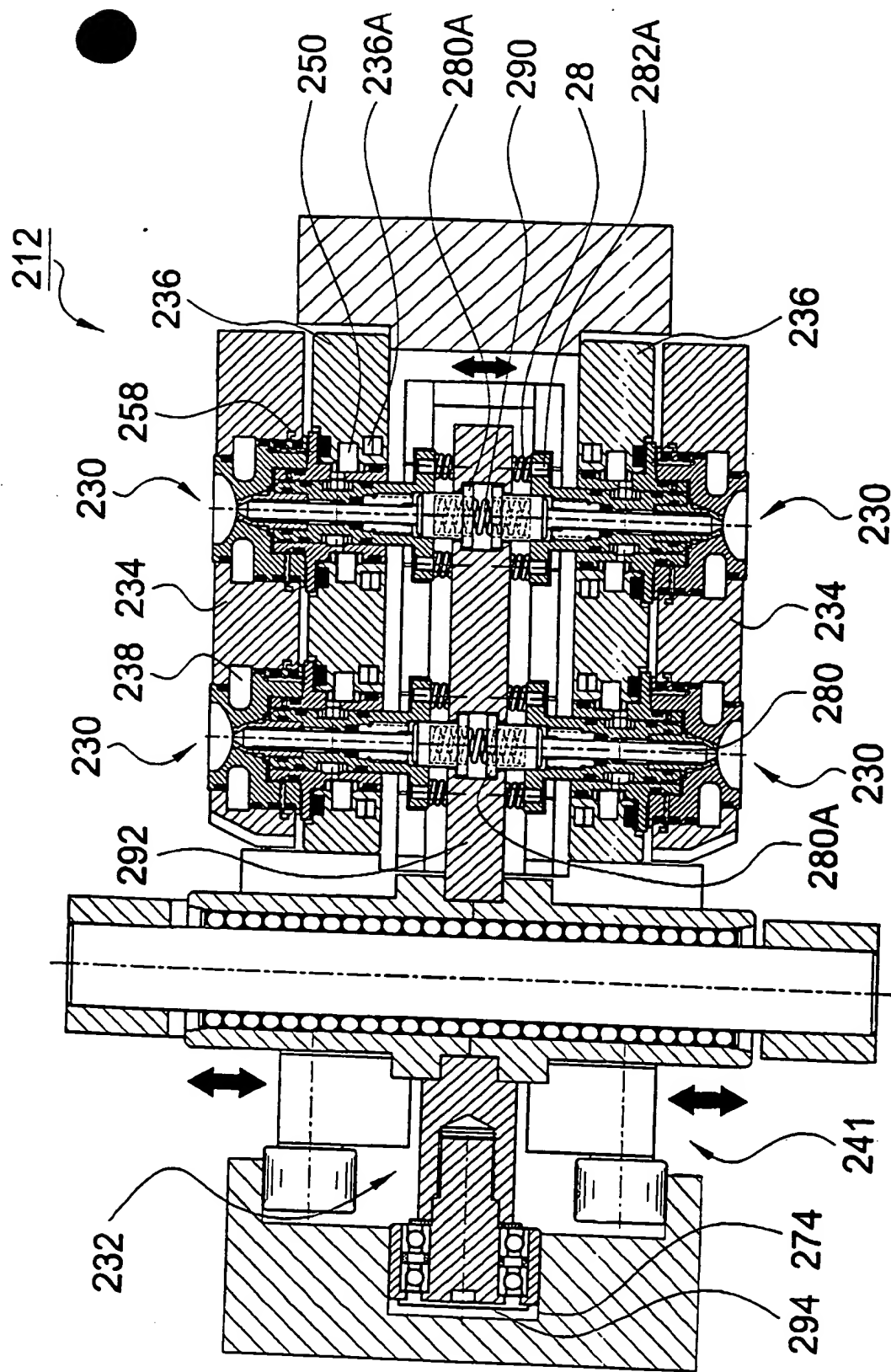


FIG. 41

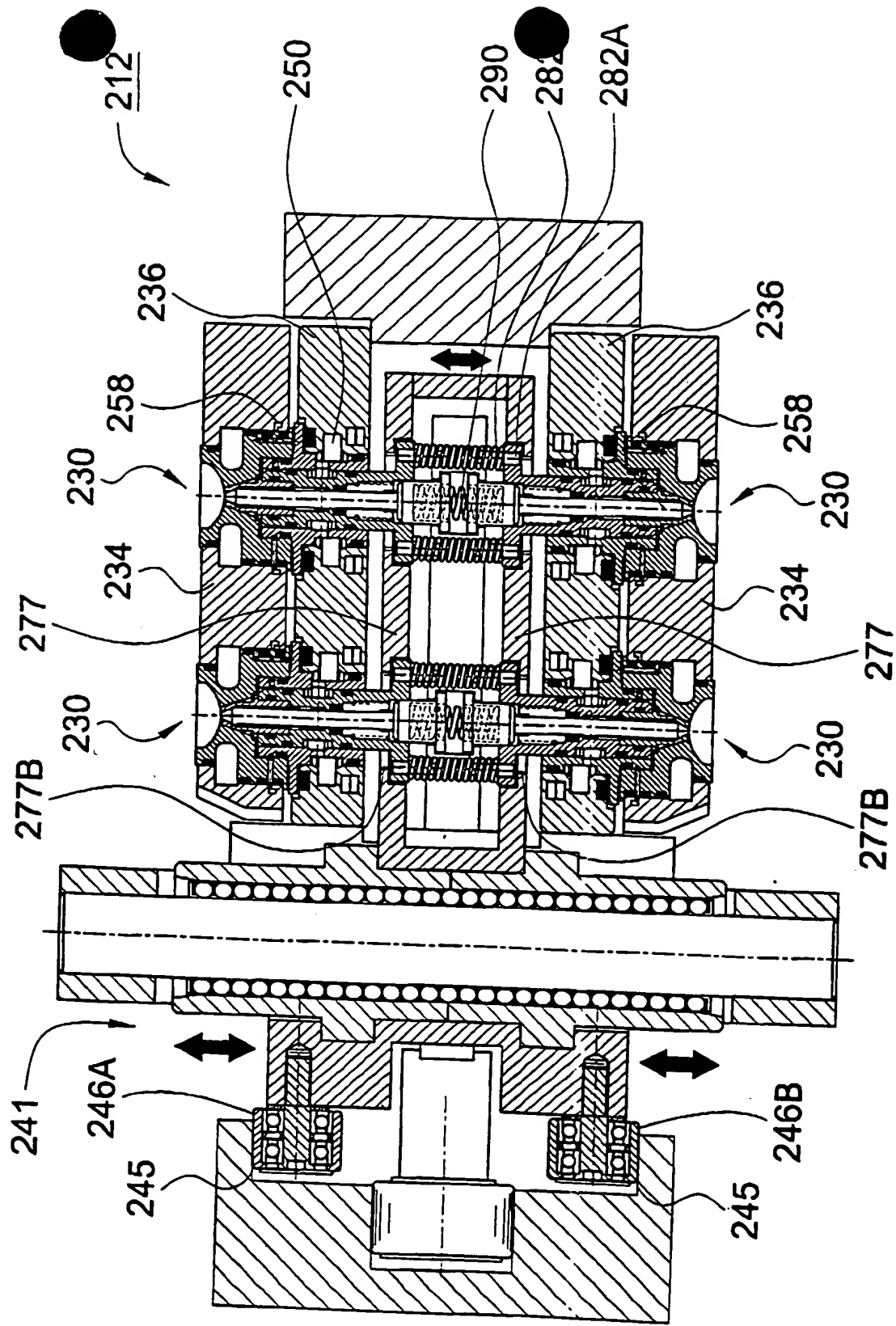


FIG. 42

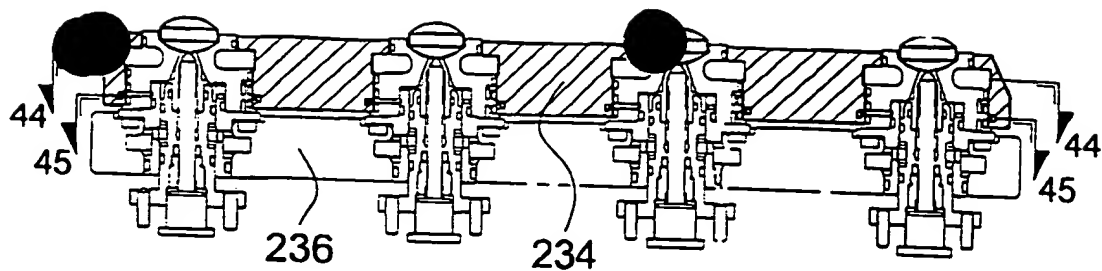


FIG. 43

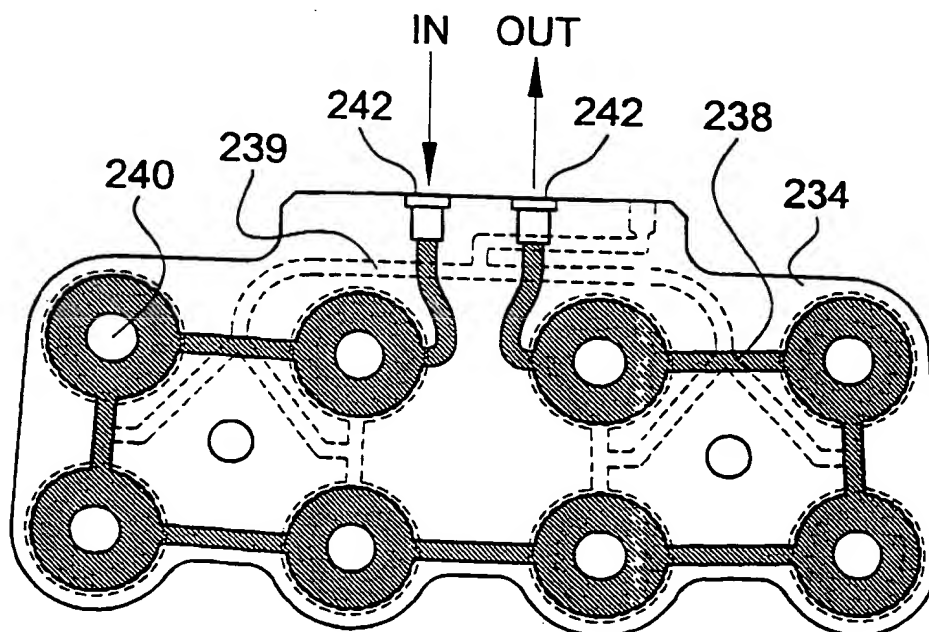


FIG. 44

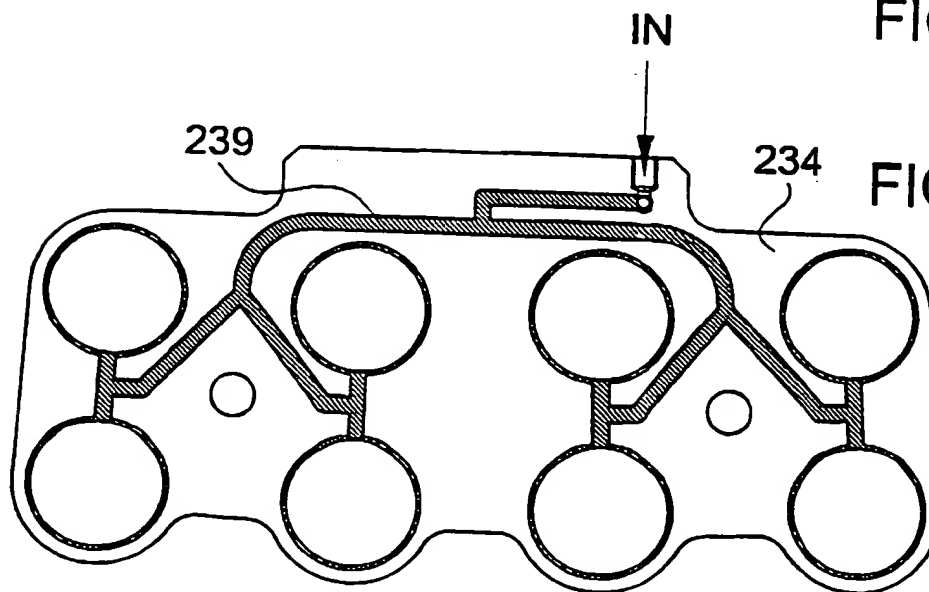
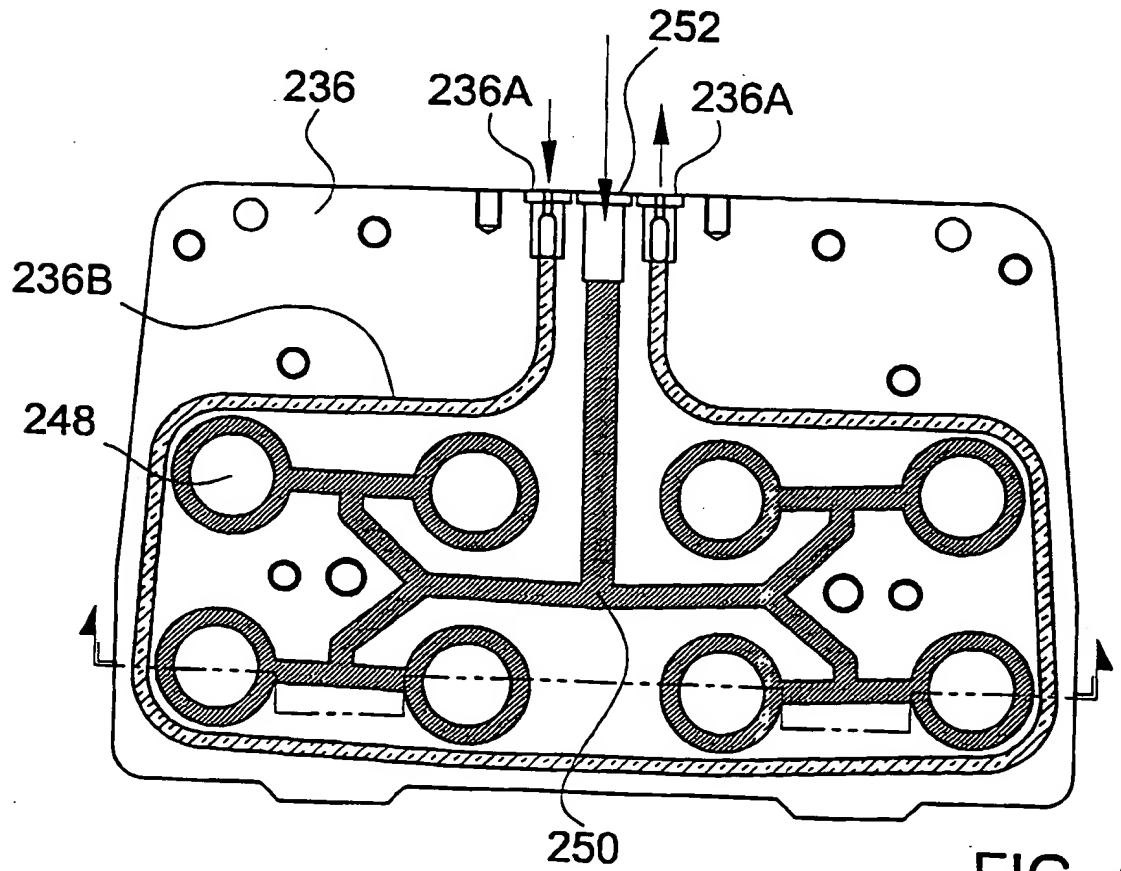
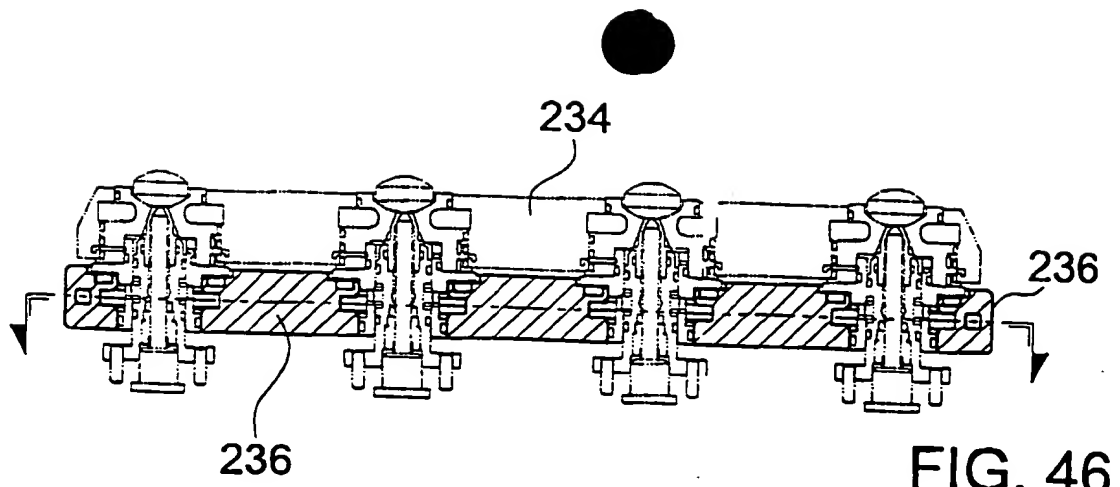


FIG. 45



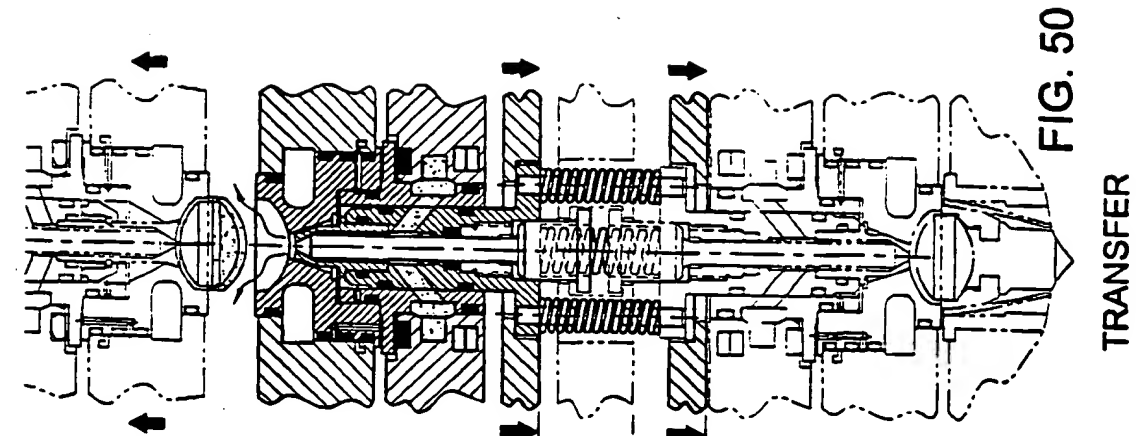
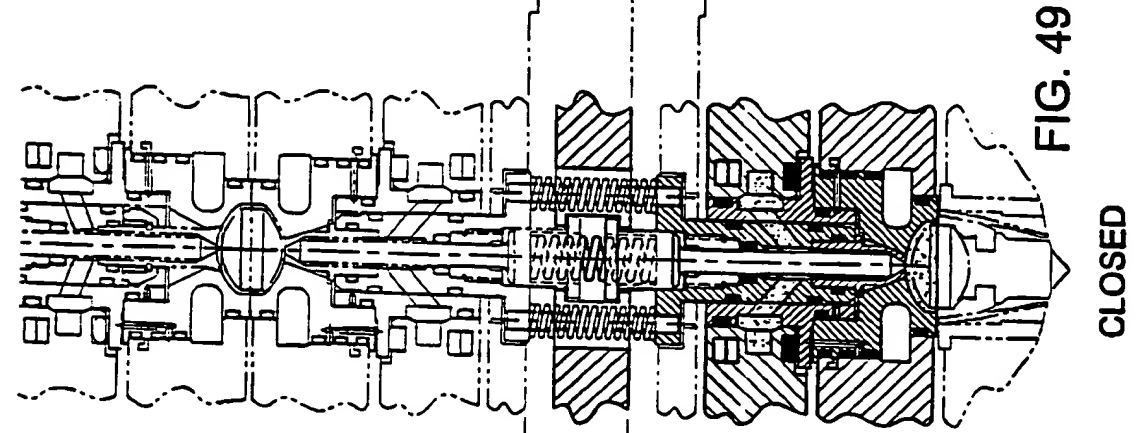
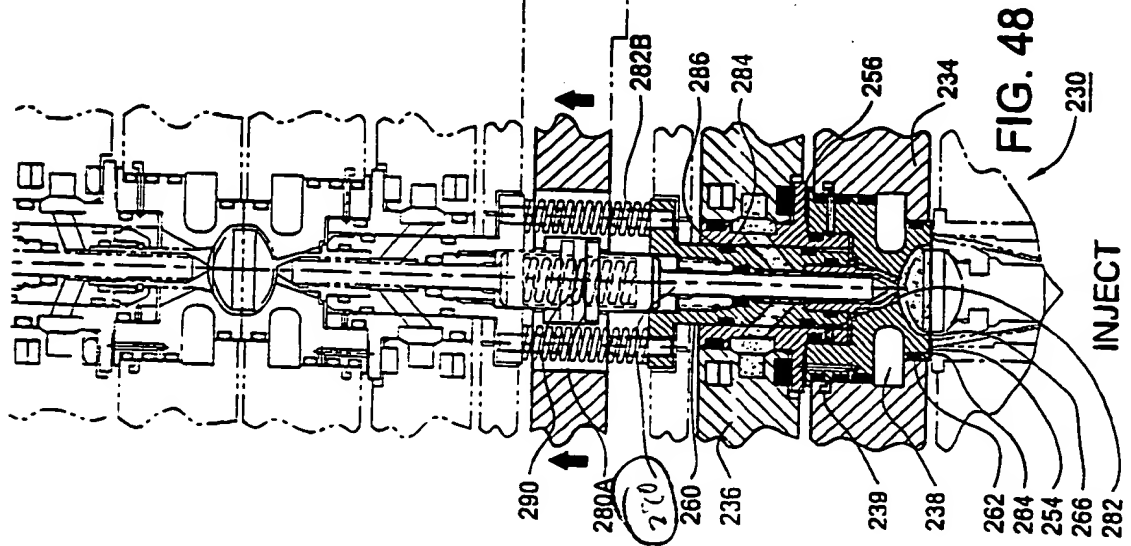


FIG. 51

FIG. 55

HOT CYCLE

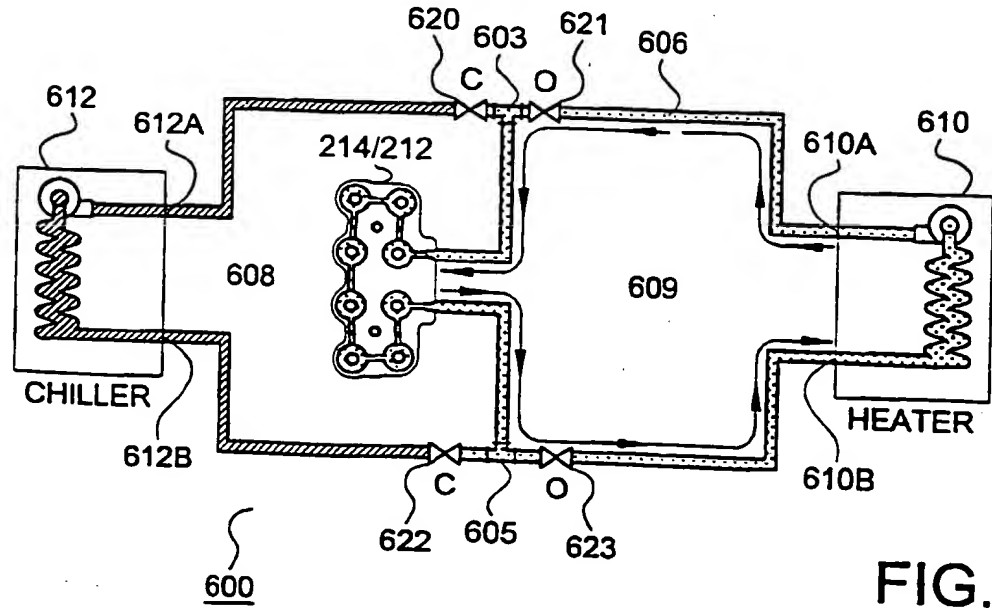


FIG. 55

COLD CYCLE

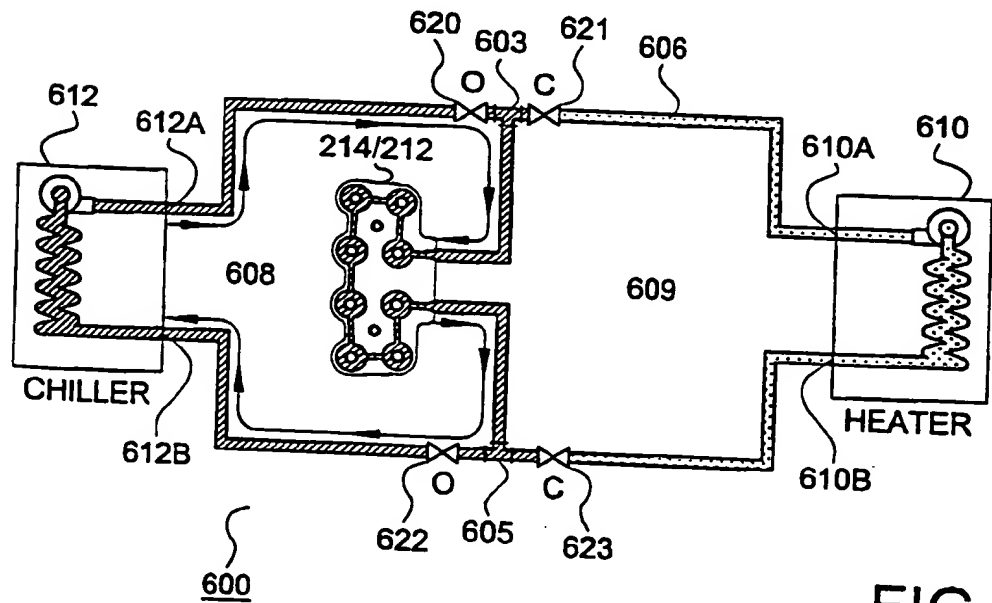


FIG. 56

O= VALVE OPEN
C= VALVE CLOSED

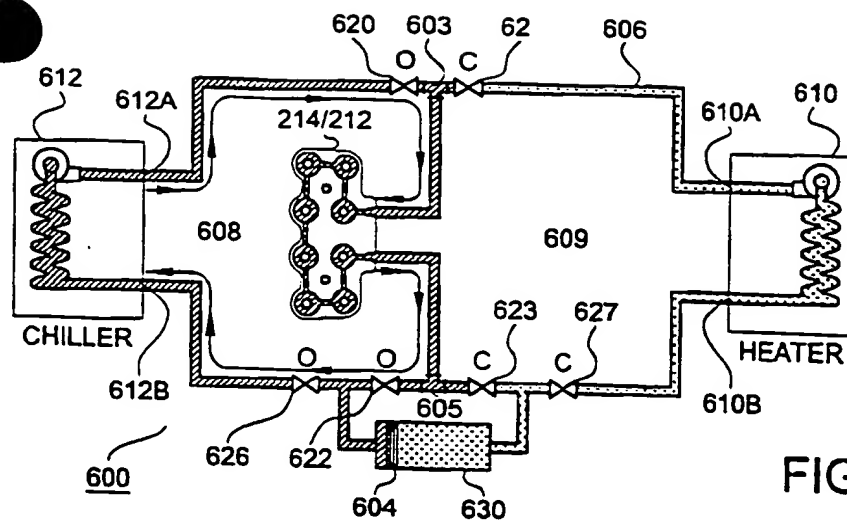


FIG. 57

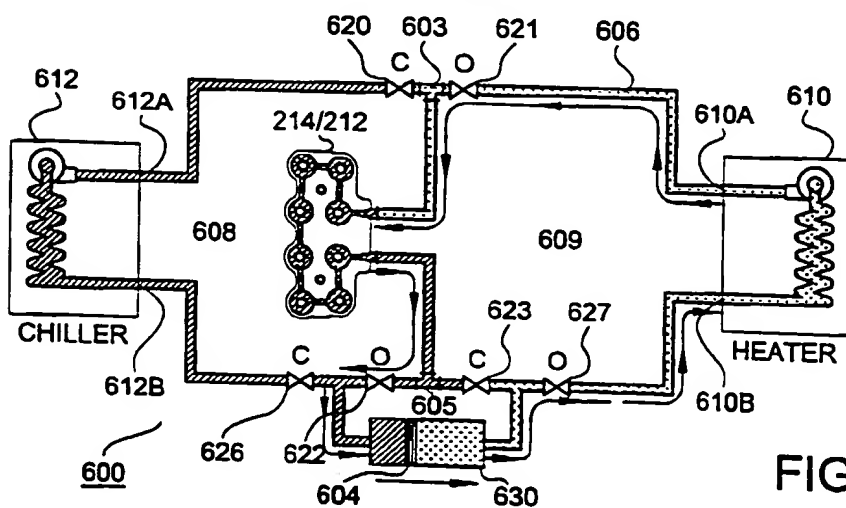


FIG. 58

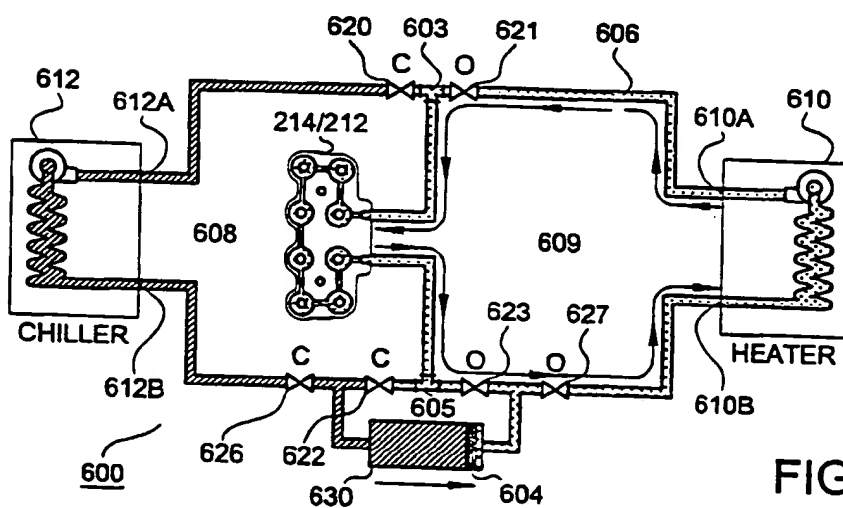


FIG. 59

O= VALVE OPEN
C= VALVE CLOSED

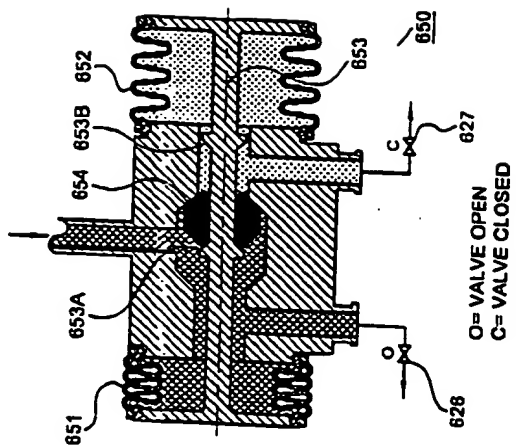
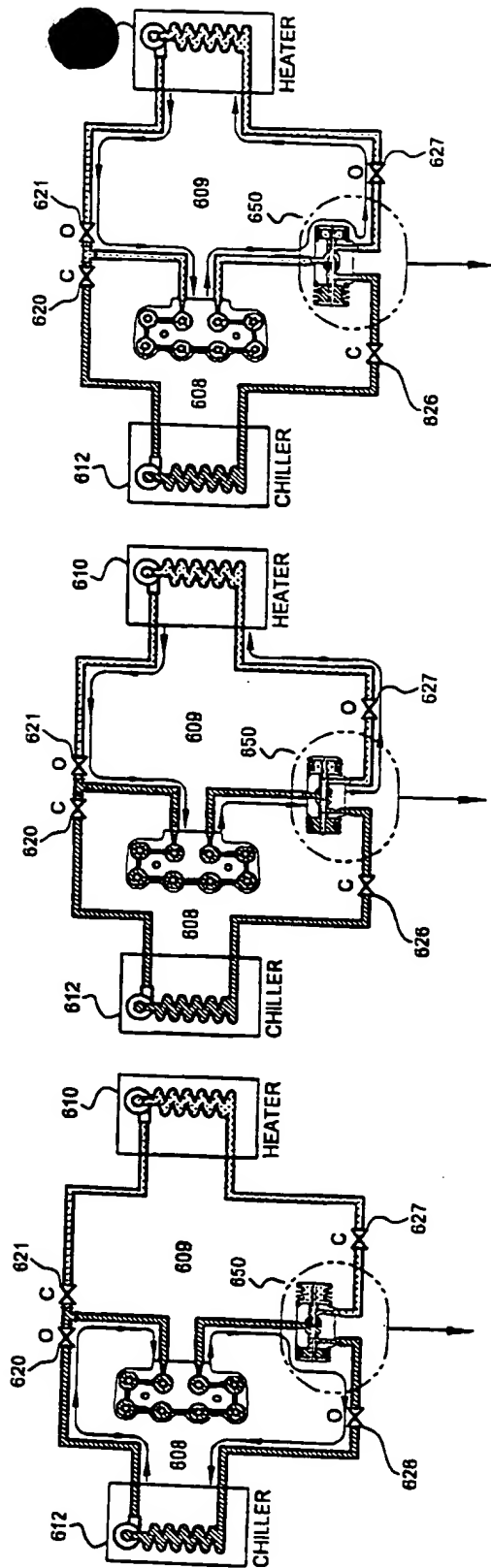


FIG. 60

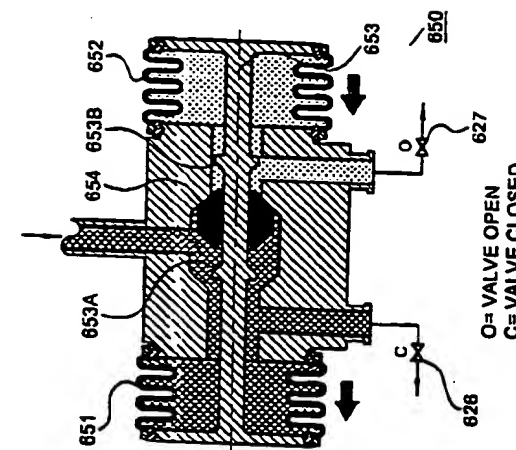


FIG. 61

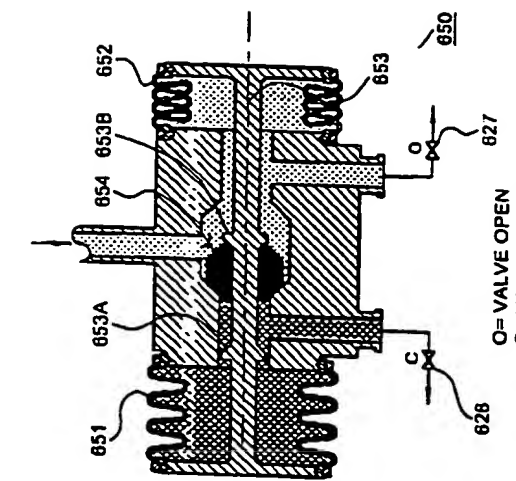


FIG. 62

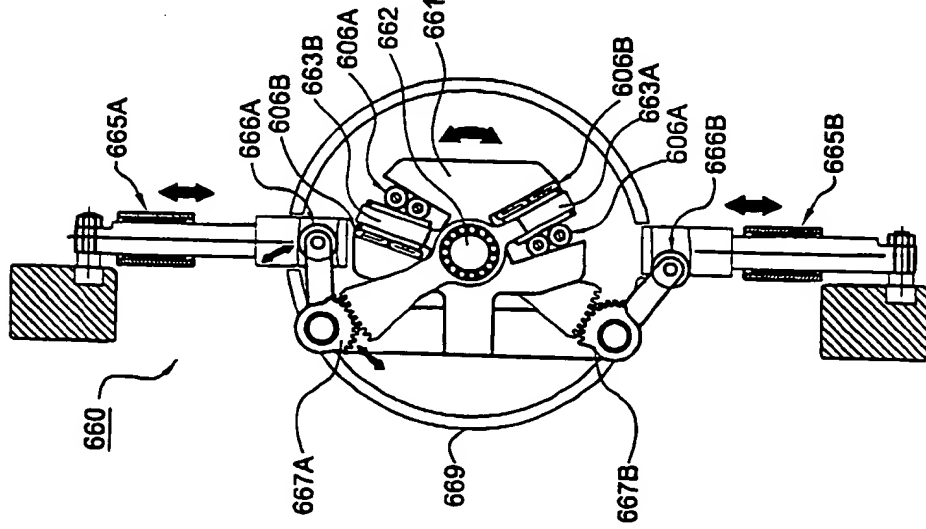


FIG. 63

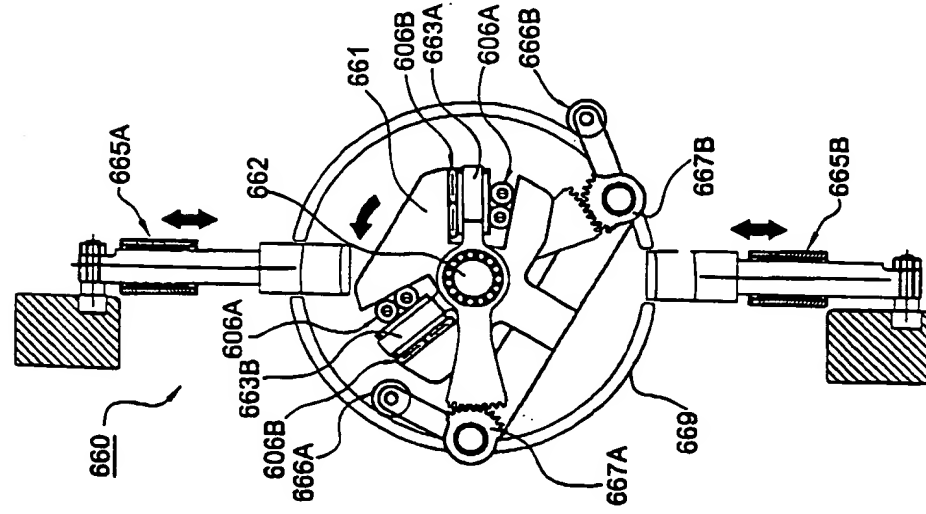


FIG. 64

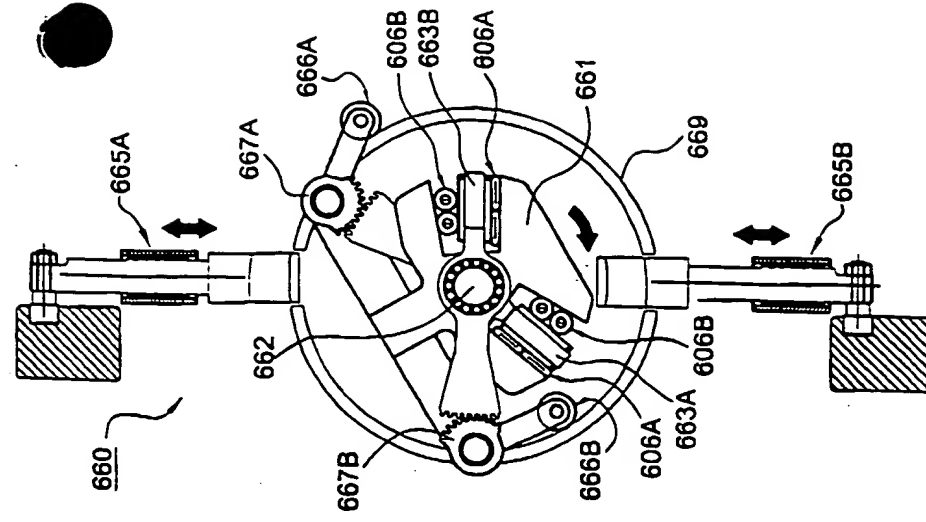


FIG. 65

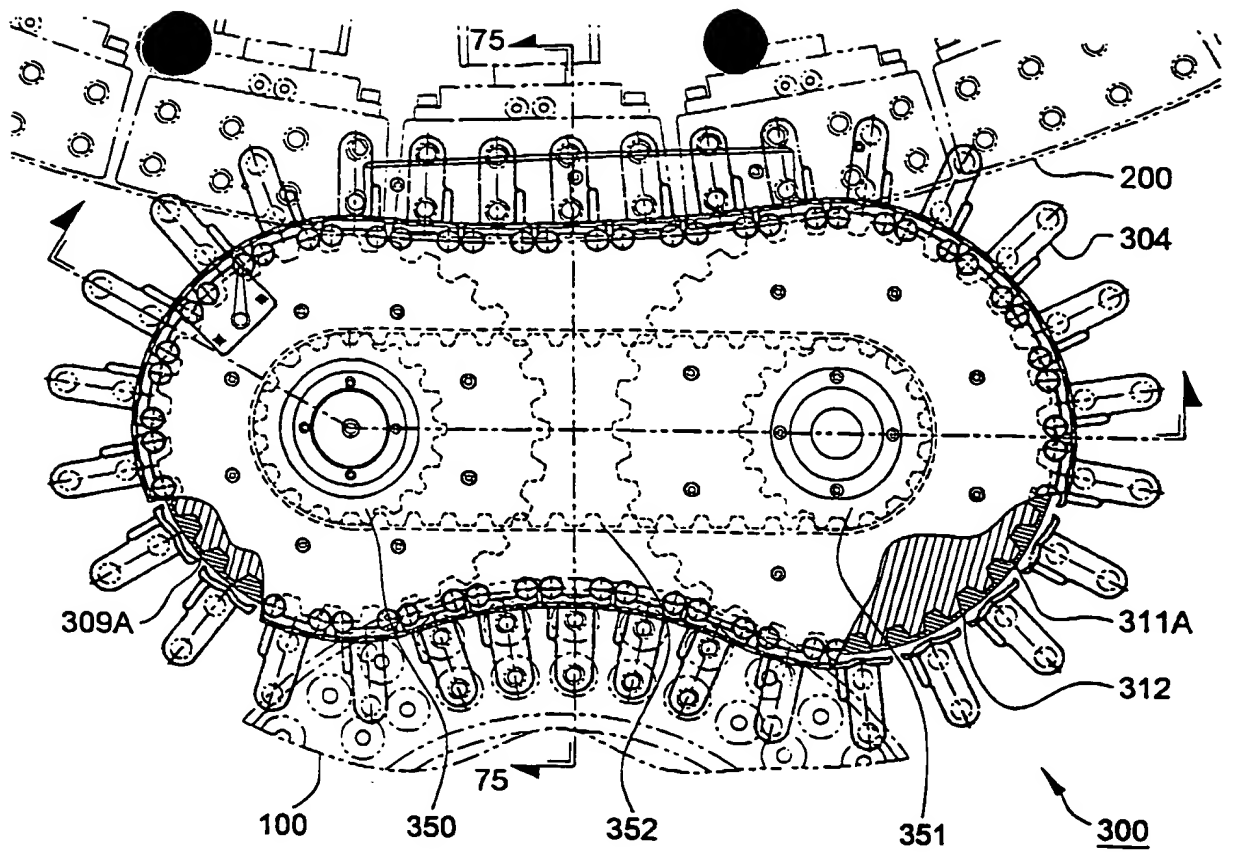


FIG. 68

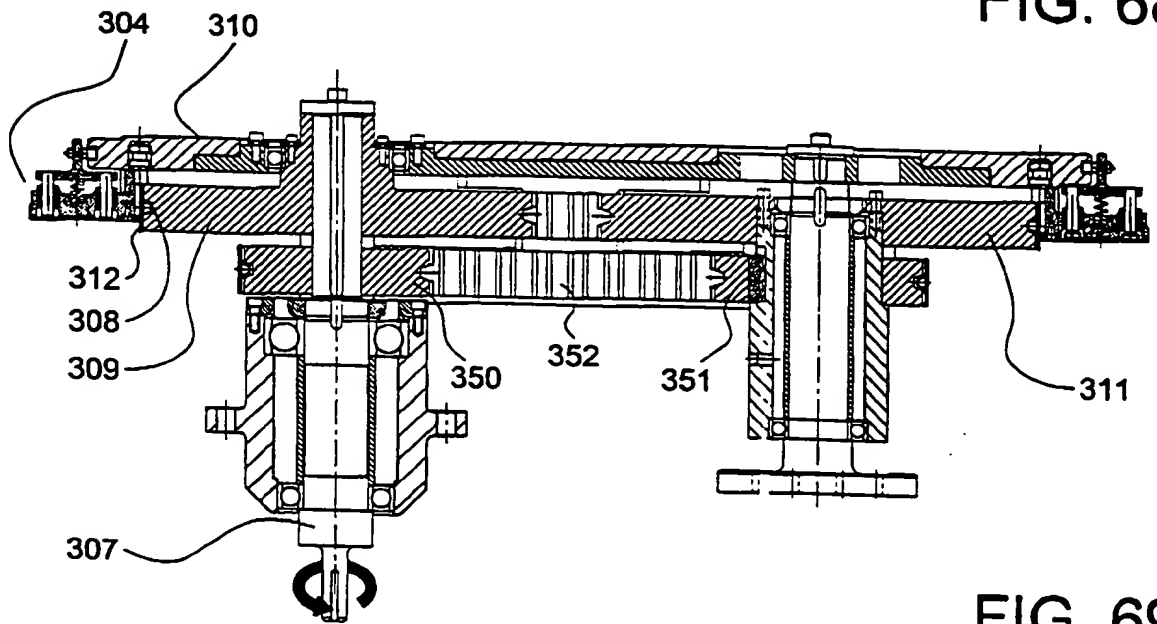


FIG. 69

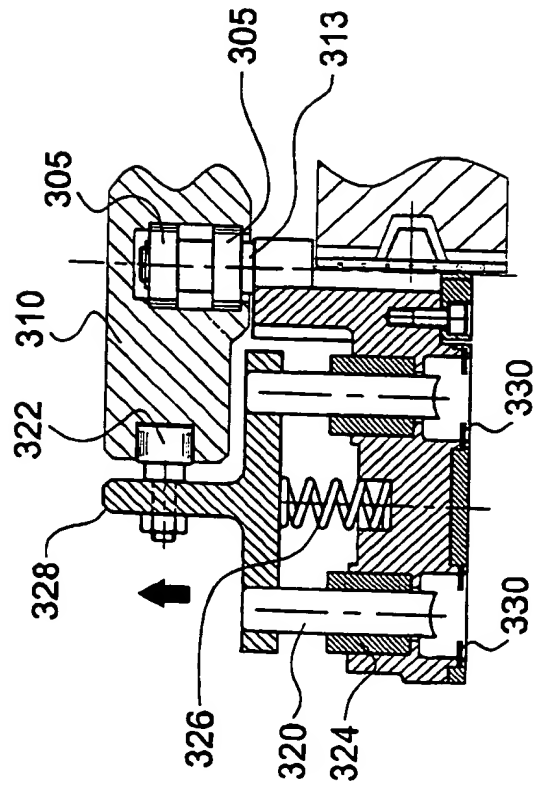


FIG. 70

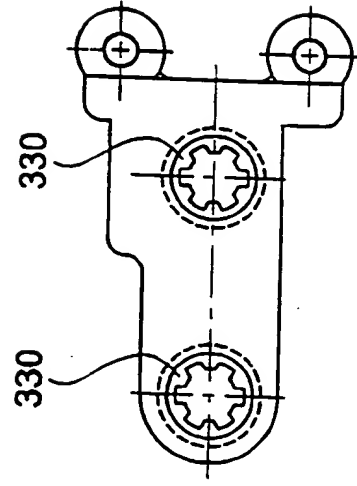


FIG. 71

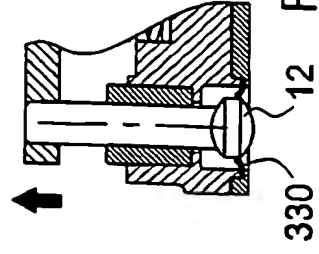


FIG. 72

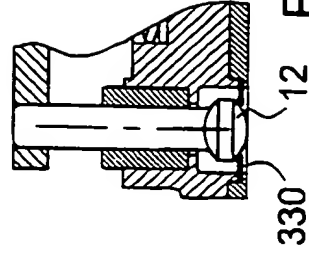


FIG. 73

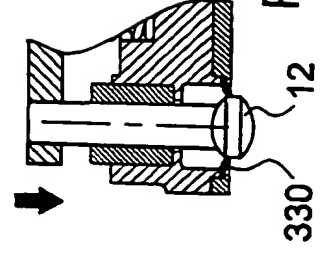


FIG. 74

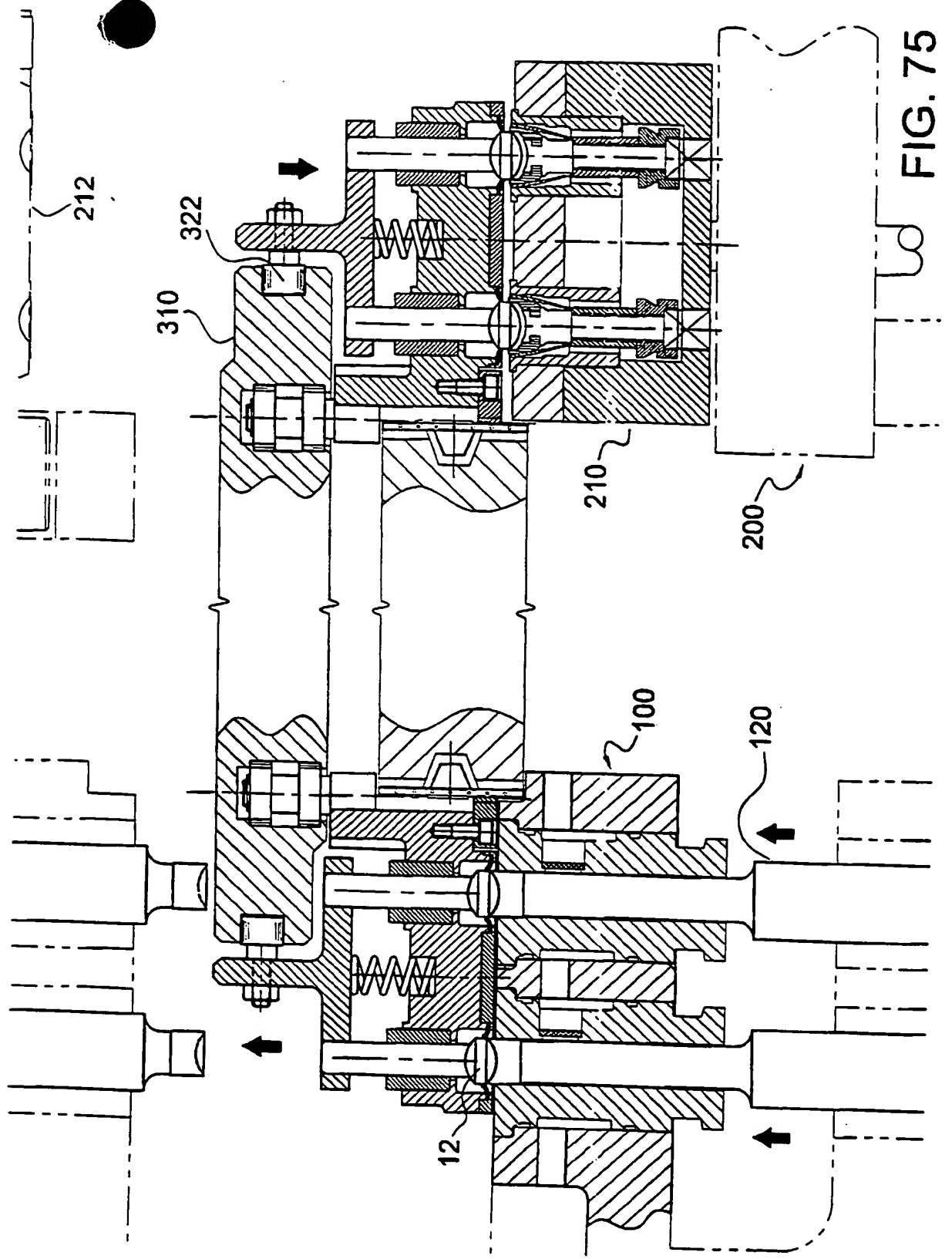


FIG. 75

FIG. 76

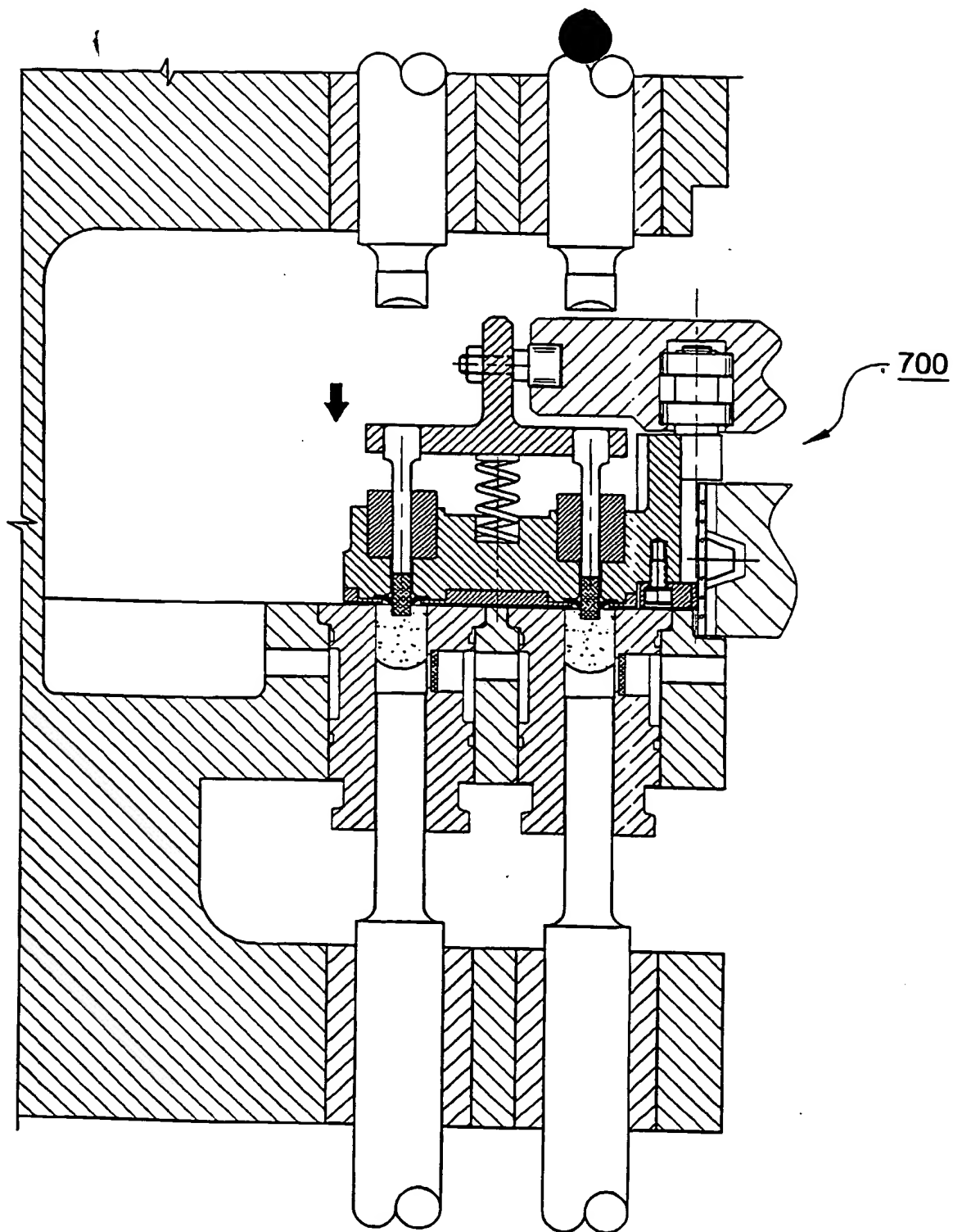
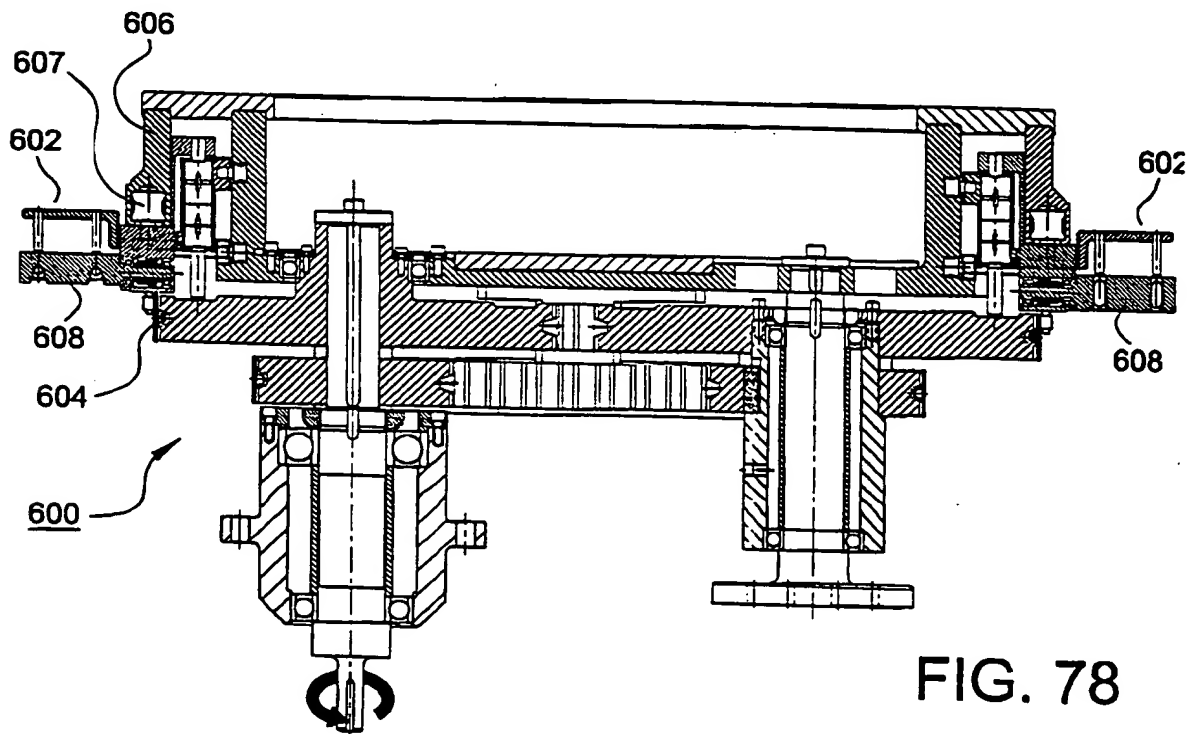
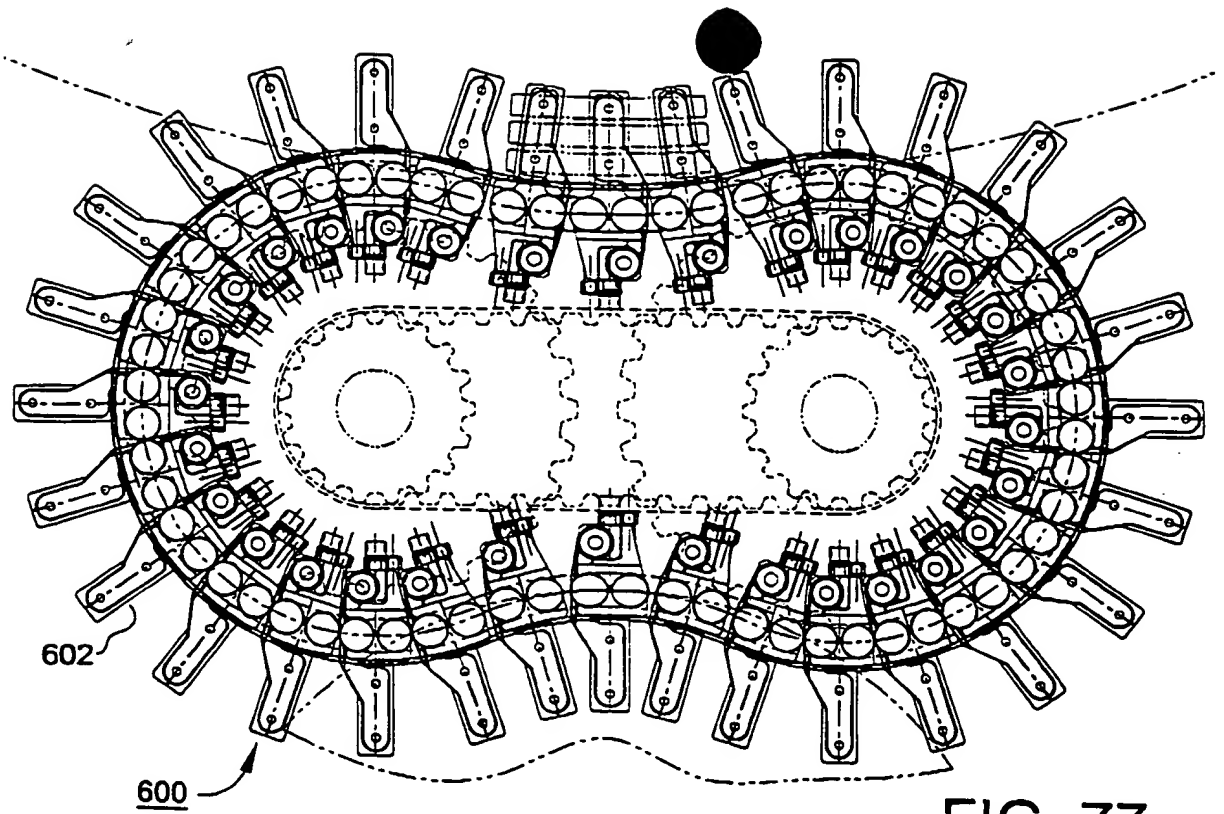


FIG. 76



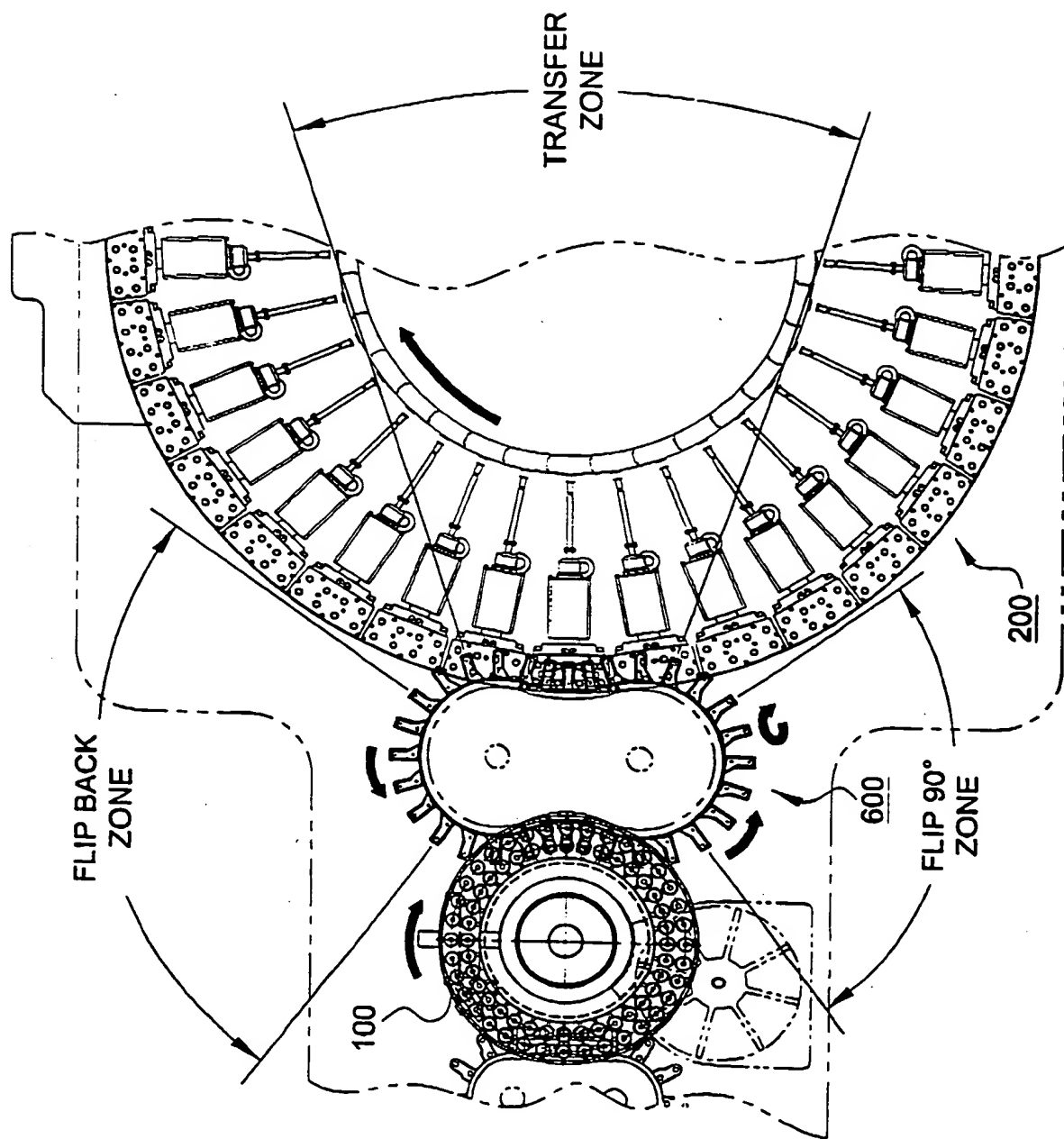


FIG. 79

FIG. 80

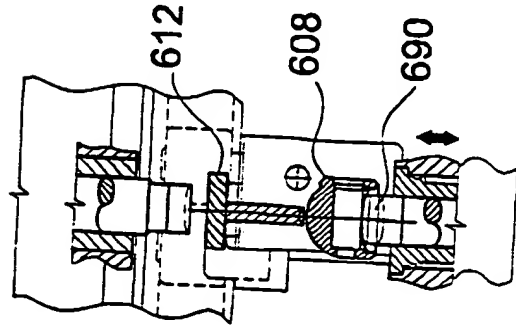


FIG. - 81A

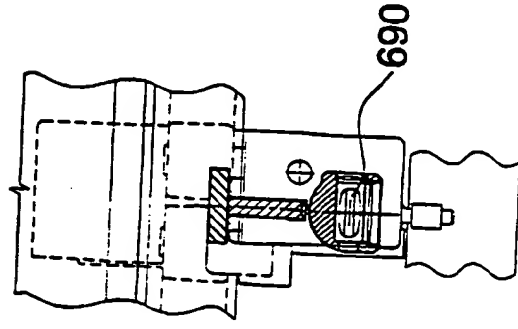


FIG. - 81B

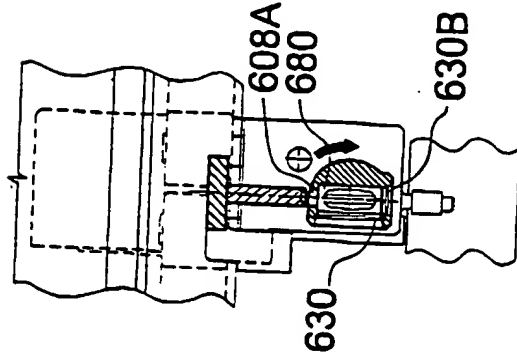


FIG. - 81C

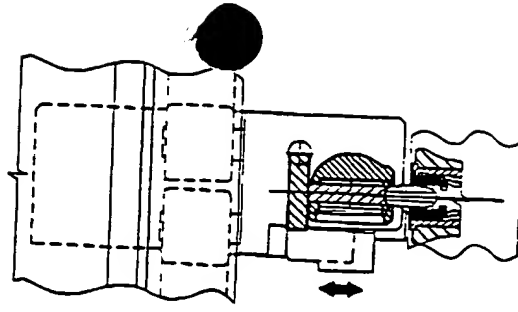


FIG. - 81D

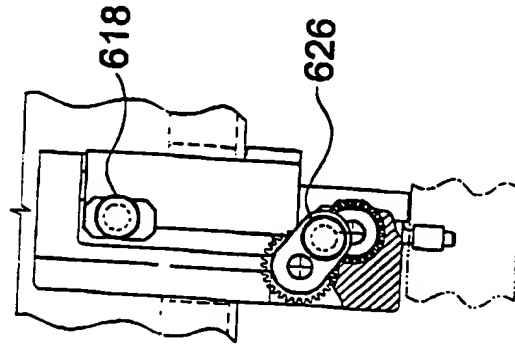


FIG. - 81E

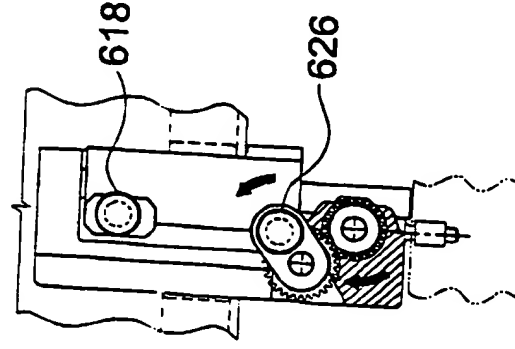


FIG. - 81F

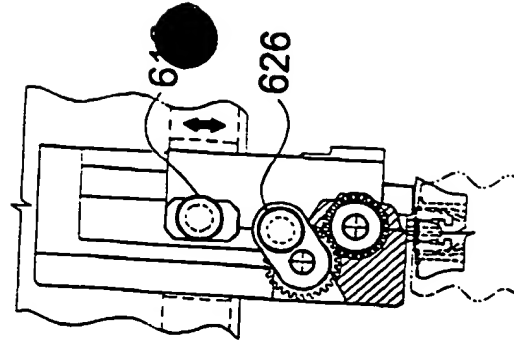
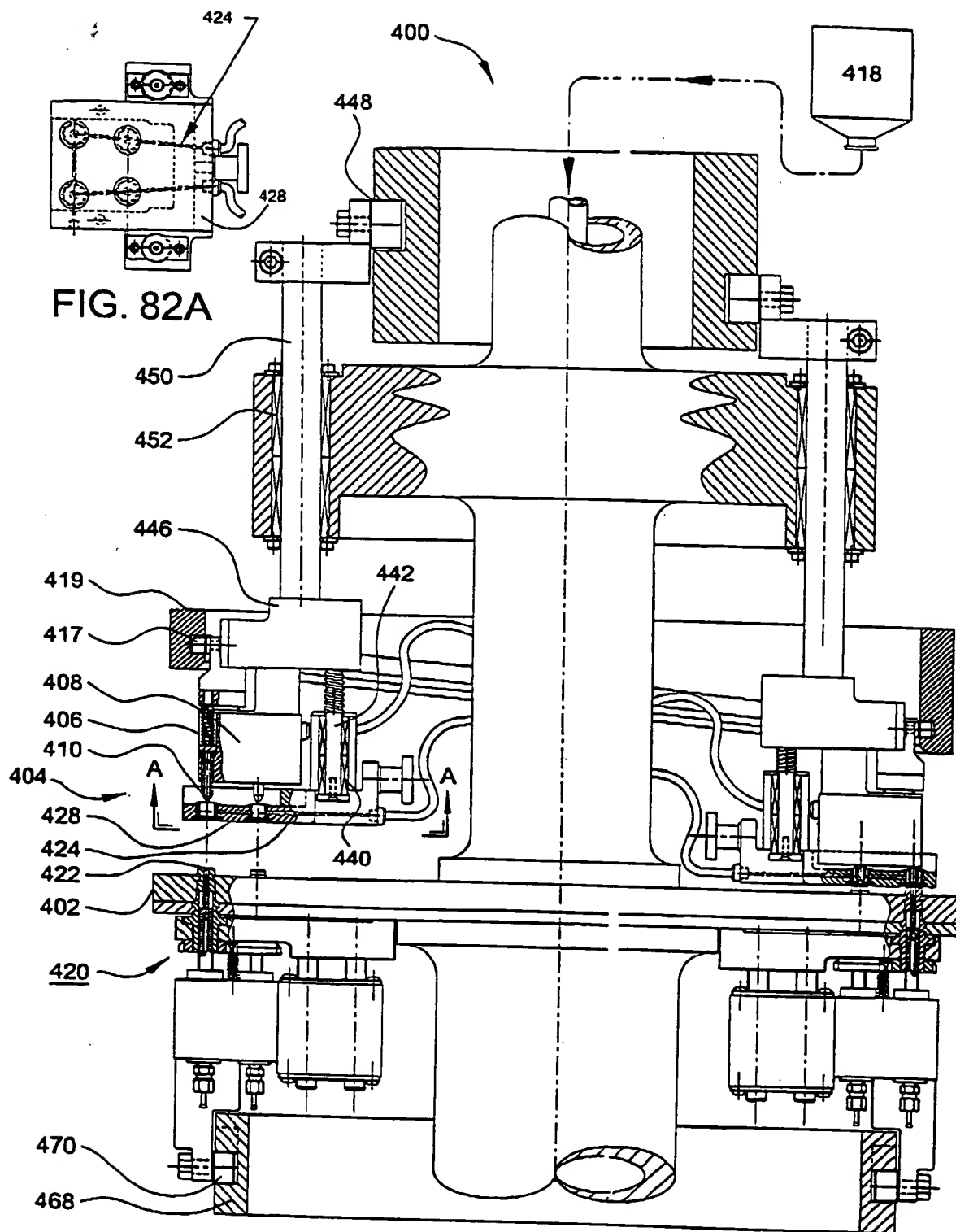


FIG. - 81G



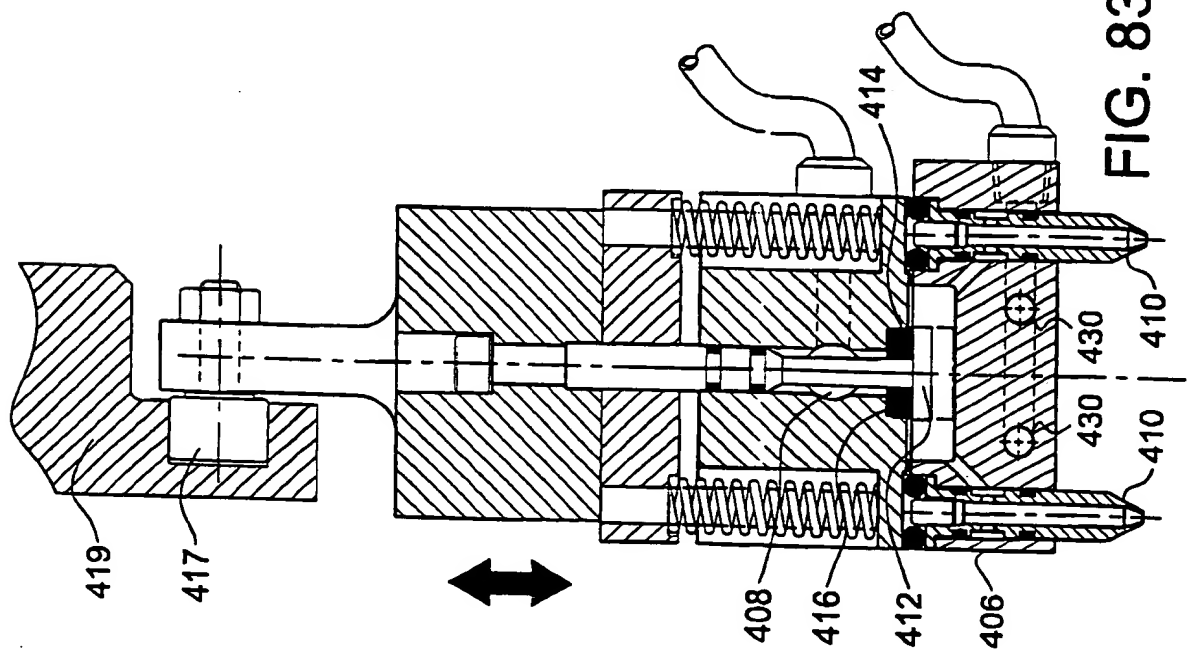


FIG. 83

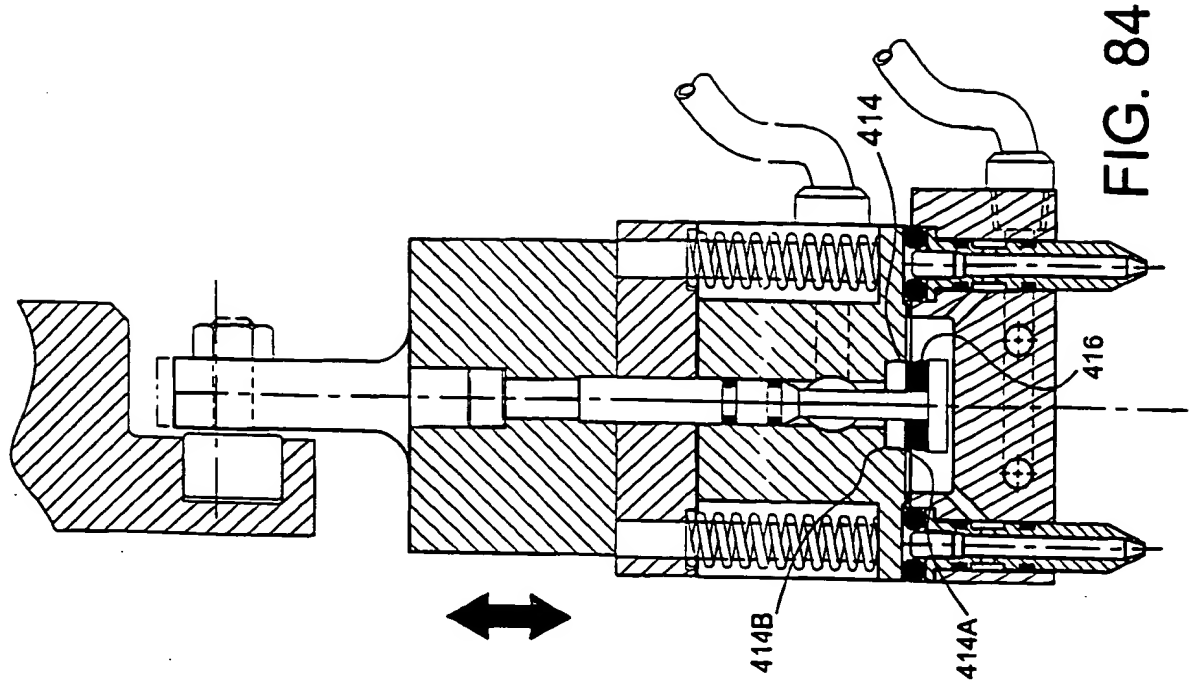


FIG. 84

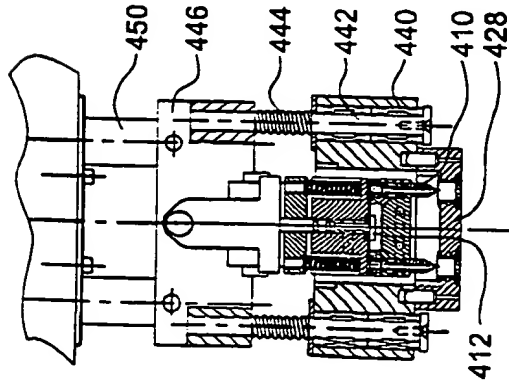


FIG.- 85A

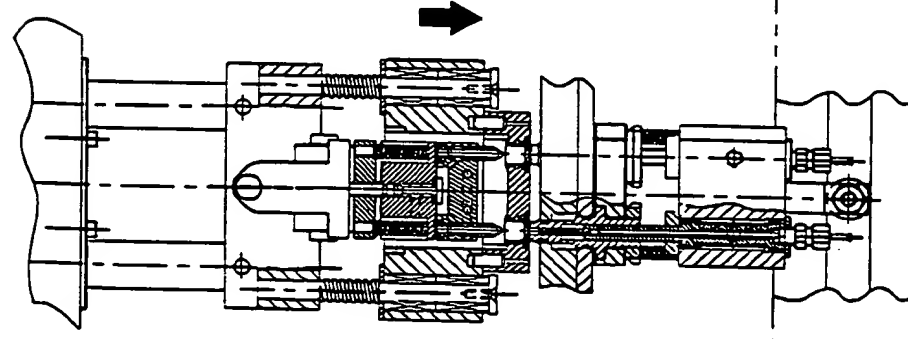


FIG. - 85B

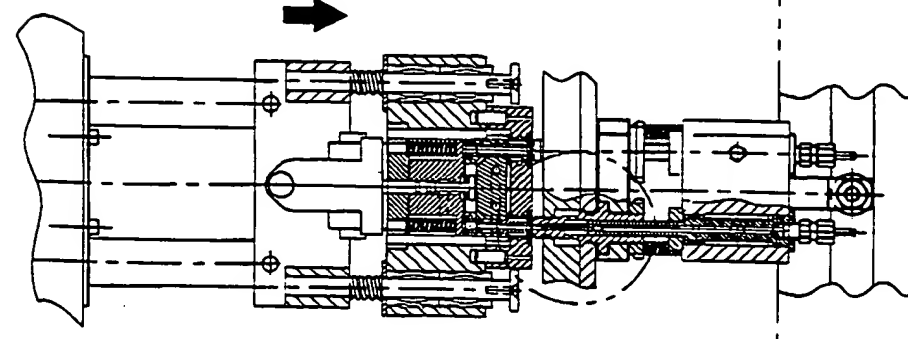


FIG.- 85C

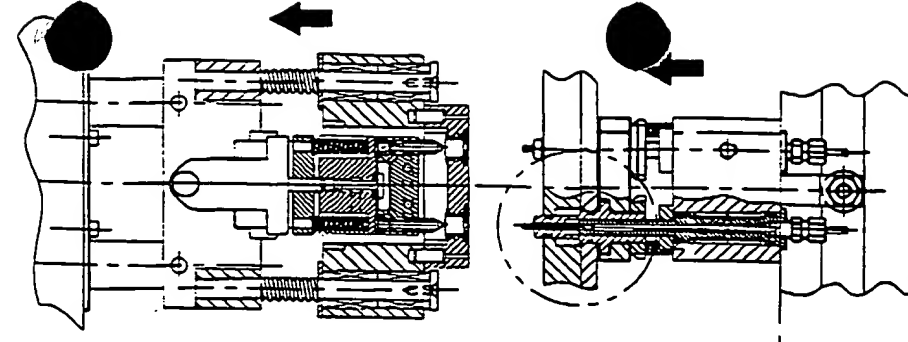


FIG.- 85D

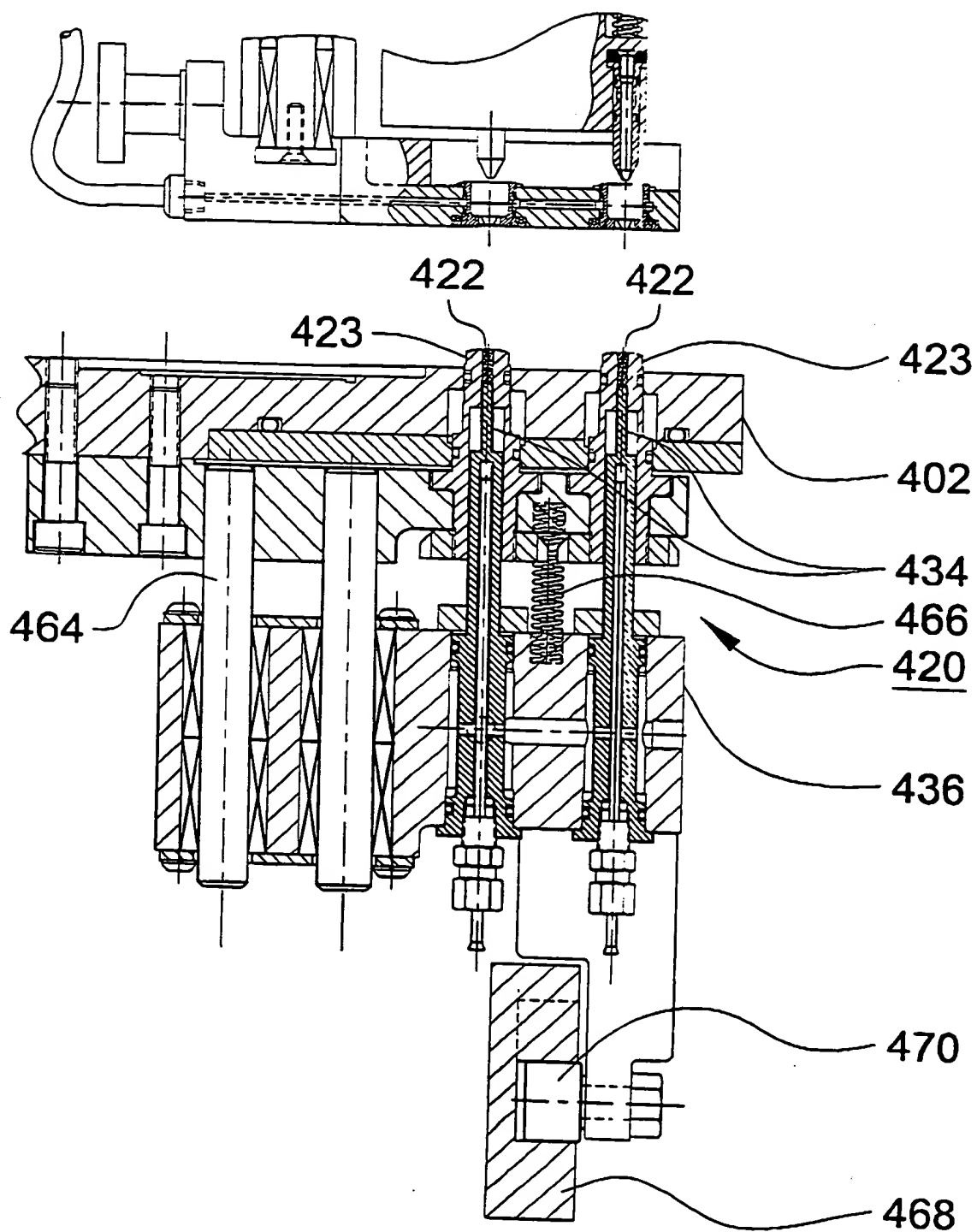


FIG. 86

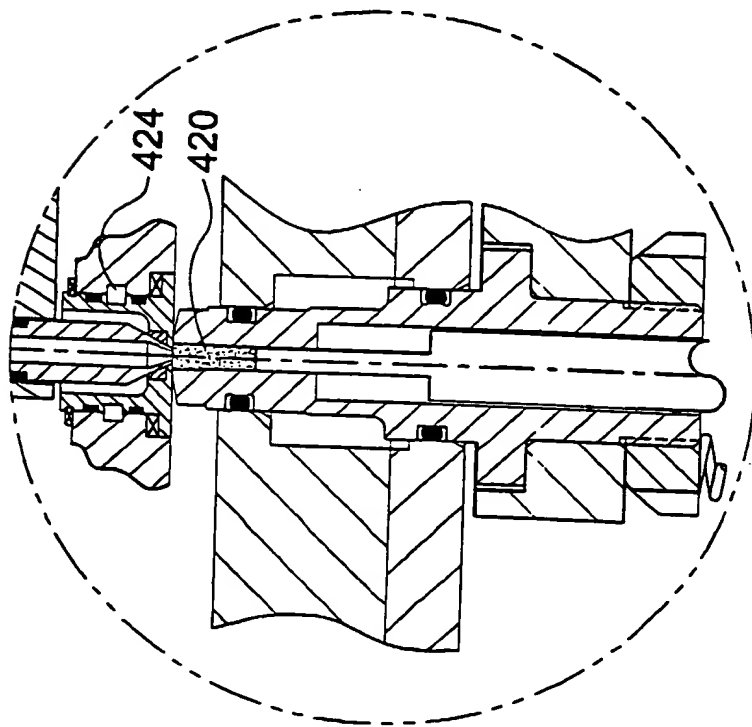


FIG. 87

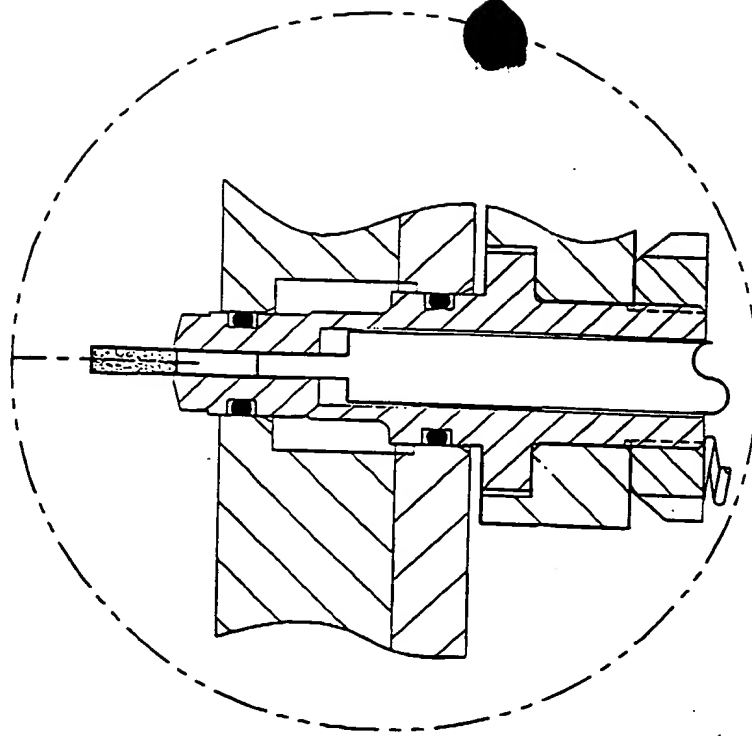


FIG. 88

FIG. 89

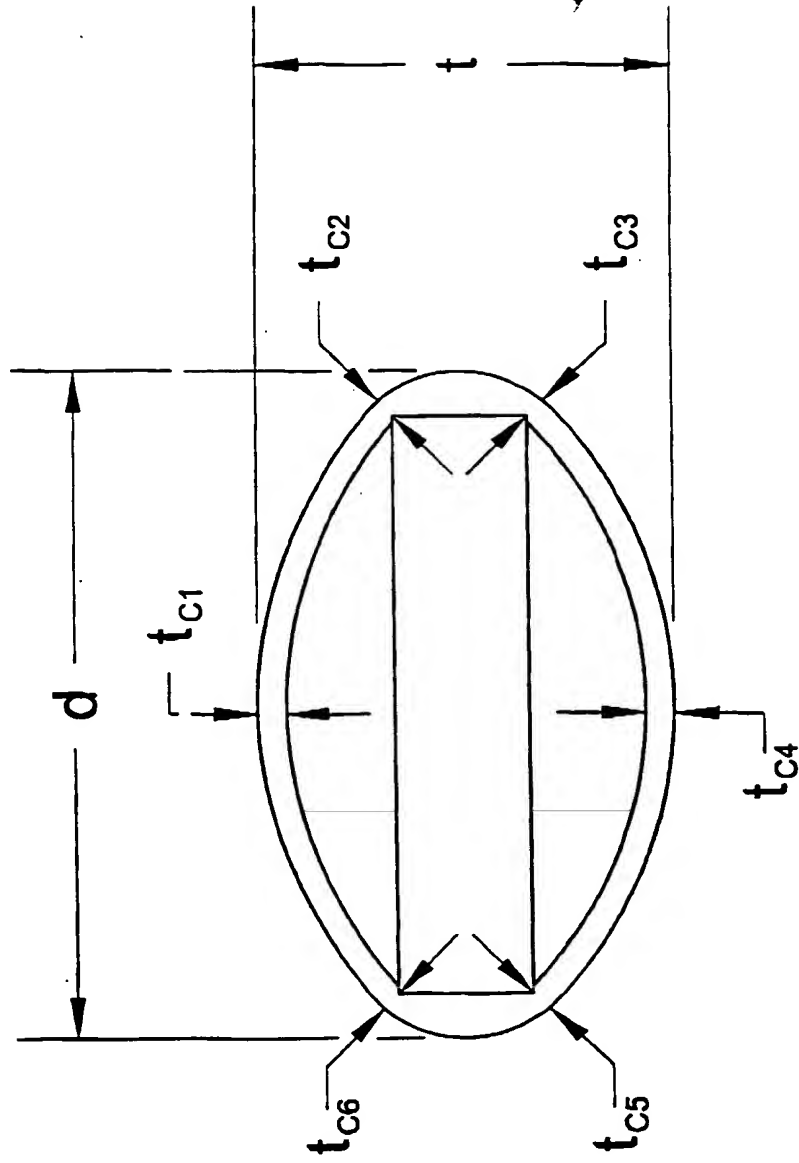


FIG. 89